



# Memorandum

**Date:** December 24, 2002

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**To** : Arthur H. Rosenfeld Commissioner and Presiding Member  
John L. Geesman, Commissioner and Associate Member

**From** : **California Energy Commission - Matt Trask**  
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**Subject** : **SAN JOAQUIN VALLEY ENERGY CENTER PROJECT ADDENDUM TO THE STAFF ASSESSMENT**

Attached please find staff's Addendum to the July 16, 2002 Staff Assessment (SA) for the San Joaquin Valley Energy (SJVEC) Project (01-AFC-22). This Addendum includes only the sections of the SA that require edits, clarifications or revised analysis based on comments received from agencies, the public, and the applicant. It includes changes to 11 sections in the July 16 SA: Air Quality, Biological Resources, Cultural Resources, General Conditions, Hazardous Materials, Land Use, Noise and Vibration, Socioeconomic Resources, Visual Resources, Soil & Water Resources, and Declarations and Resumes.

The Addendum does not reissue the entire SA, but rather, contains only the edits to the July 16 SA. Changes were so extensive in three sections – Air Quality, General Conditions and Visual Resources – that they are re-printed in their entirety in this Addendum, without any figures or appendices, and should replace the text portions of those sections of the July 16 SA. All other changes and additions are contained in the "Changes and Additions" chapter of this Addendum, showing (underlined) new text and (strike out) text to be removed.

Briefly, this Addendum identifies Air Quality and Noise as areas of special concern. The project's oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOCs), sulfur dioxide (SO<sub>2</sub>) and particulate matter less than 10 microns in diameter (PM<sub>10</sub>) emission impacts resulting from the operation of the facility could be significant if left unmitigated. This Addendum identifies major problems with the applicant's proposed mitigation of these operational air quality impacts, due largely to a disagreement between the US Environmental Protection Agency and the San Joaquin Valley Air Pollution Control District over validity of many of the Emission Reduction Credits (ERCs) that the applicant has proposed as mitigation for the SJVEC. Therefore, staff recommends that the Applicant procure further mitigation beyond the mitigation provided. Until and unless additional ERCs are provided by the Applicant as mitigation for operational impacts, staff cannot recommend approval of the project. Please see the Executive Summary section and the Air Quality section of this addendum for further details on this issue.

Though staff's conclusions and proposed mitigation for potential noise impacts have not changed from the July 16 Staff Assessment, the Noise section in this Addendum includes an analysis of the applicant's recent proposal to buy out several residents living near the SJVEC site, and install noise abatement measures at other nearby residences, as a means of mitigating the noise impact that would be created by plant operation. As was made clear in the July 16 Staff Assessment, staff determined that the applicant should first install all feasible on-site noise mitigation measures, and then and only then look to off-site mitigation measures, if needed, to reach a less-than-significant noise level at the affected homes near the plant site. Until Staff can analyze the feasibility of installing on-site noise abatement measures towards the goal of attaining the noise levels specified in Condition of Compliance **Noise-6**, staff has no way of knowing whether the Applicant's recent informal proposal for off-site noise mitigation would be feasible or preferable compared to installing on-site noise abatement measures. Therefore, no modification to the Proposed Conditions of Certification regarding noise is warranted at this time, though staff anticipates that this issue will be a topic during evidentiary hearings.

With the exception of Air Quality, Staff concludes that the project poses little potential for significant environmental impacts and that those potentially significant environmental impacts that have been identified can be mitigated to less than significant levels. Staff's analysis also concludes that the project can comply with all LORS, again with the exception of Air Quality, where staff identified potential nonconformance with portions of the federal Clean Air Act.

Staff recommends that the Commission withhold approval of the SJVEC until the applicant obtains additional valid ERCs to offset the operational emissions from the project. Staff also suggests that the Committee set a Pre-Hearing Conference for January 10, 2003, to allow the applicant sufficient time to review the information contained in this addendum.

Cc: Major Williams  
POS  
Agency/Libraries (7146)

**SAN JOAQUIN VALLEY ENERGY CENTER  
(01-AFC-25)  
ADDENDUM TO STAFF ASSESSMENT**

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# EXECUTIVE SUMMARY

Testimony of Matt Trask

On October 31, 2001, Calpine Corporation filed an Application for Certification (AFC) for the Central Valley Energy Center seeking approval from the California Energy Commission ("Commission" or CEC) to construct and operate a 1060 megawatt (MW) natural gas-fired, combined cycle power generating facility near the town of San Joaquin in Fresno County. The name of the project was later changed to the San Joaquin Valley Energy Center (SJVEC or Project) to avoid confusion with another project called the Central Valley Energy Facility, owned by Enron.

On January 9, 2002, the Energy Commission found the AFC to be Data Adequate, initiating an expedited review process to consider the application for certification. Energy Commission Staff released its Staff Assessment of the SJVEC AFC on July 16, 2002. The analyses contained in the initial Staff Assessment (SA) were based upon information from: 1) the AFC; 2) responses to initial data requests, workshops, and site visits; 3) supplementary information from federal, state, and local agencies; 4) existing documents and publications; and 5) staff research.

The AFC was initially being reviewed under an expedited 6-month review process in accordance with the emergency siting regulations implementing Public Resources Code section 25550 (AB 970, Chapter 329, Statutes of 2000). However, because of problems encountered concerning the validity of certain mitigation for the project, and extended delays in the schedule that occurred while trying to resolve these problems on a staff level, the SJVEC AFC is now being processed under the Commission's 12-month review process.

This SA Addendum contains updated information concerning the Commission staff's independent analysis and recommendations on the SJVEC. The SJVEC and related facilities, such as the project's associated natural gas line and water supply lines, are under the Energy Commission's jurisdiction. When issuing a license, the Energy Commission acts as lead state agency (Pub. Resource Code § 25519(c)) under the California Environmental Quality Act (Pub. Resource Code §§ 21000 et seq.). Its process has been certified by the Secretary for Resources, allowing the Commission's siting plan documentation to be used in lieu of an environmental impact report (Cal. Code Regs., tit. 14 § 15251(k)).

It is the responsibility of the Energy Commission staff to complete an independent assessment of the project's potential effects on the environment, the effects on the public's health and safety, and determine whether the project conforms to all applicable laws, ordinances, regulations and standards (LORS). Staff also recommends measures to mitigate potential significant adverse environmental impacts associated with the construction, operation, and eventual closure of the project, if approved by the Energy Commission.

Though staff has concluded in this Addendum that it cannot at this point recommend approval of the project (see below), the SA and the Addendum are not the decision document for the Energy Commission. The final decision on the proposed project will

be made by the Commissioners of the California Energy Commission only after submission of this Addendum to the SA, submission of testimony of the applicant and other parties, and evidentiary hearings. The Commissioners will consider the recommendations of all interested parties, including those of the Energy Commission staff, the applicant, intervenors, concerned citizens, and local, state, and federal agencies, before making a final decision on the application to construct and operate the SJVEC.

## **PROJECT LOCATION AND DESCRIPTION**

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The project would occupy about 25 acres of an 85-acre parcel within the City of San Joaquin in Fresno County, California. The new combined cycle facility is expected to generate 1,060-megawatts (MW) under nominal conditions.

The generating facility would consist of three combustion turbine generators (CTGs) equipped with dry, low oxides of nitrogen (NO<sub>x</sub>) combustors and steam injection power augmentation capability; three heat recovery steam generators (HRSG) with duct burners; one condensing steam turbine generator (STG); a deaerating surface condenser; a mechanical-draft cooling tower; and associated support equipment. The project would also include a 230-kilovolt (kV) switchyard, approximately 1,500 feet of new 230-kV transmission line, approximately 20 miles of new 24-inch diameter natural gas pipeline, approximately 21 miles of 27-inch diameter pipeline for reclaimed water supply, an approximately 1.0-mile-long pipeline for domestic water supply to the plant, and an approximately 2.5-mile long sanitary sewer line. The cooling water supply for the project would be reclaimed water drawn from the Fresno-Clovis Wastewater Treatment Facility approximately 20 miles northeast of the project site. The project would incorporate a zero liquid discharge system, including use of a brine crystallizer, and would not discharge to the local sewer system except for sanitary drains.

The general location of the SJVEC is shown on Figure 1 of the July 16 Staff Assessment, See **Project Description Figure 1**. An aerial view of the plant layout in **Project Description Figure 2** in the Staff Assessment shows the power plant site, and **Project Description Figure 3** in the Staff Assessment provides a view of how the plant would look on the site.

## **CONSTRUCTION AND OPERATIONS**

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The total Project cost is estimated to be approximately \$550 million dollars. Originally, construction was planned to begin in the third quarter 2002 and be completed by the third quarter 2004. This schedule has since been eclipsed by events out of the Applicant's and the Commission's control. Additionally, because staff cannot currently recommend approval of the project, staff also cannot currently provide an estimated schedule for construction and operation of the facility.

## **PUBLIC AND AGENCY COORDINATION**

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Several publicly noticed workshops were held on the topics of Air Quality, Noise, Public Health, Transmission System Engineering, and Visual Resources. The workshops were

held either in the City of San Joaquin or at the Energy Commission. In addition to these workshops, extensive coordination has occurred with the numerous local, state, and federal agencies that have an interest in the project. Written comments on the initial SA were encouraged and were considered in staff's Final Addendum.

## OVERVIEW OF STAFF'S CONCLUSIONS

Staff believes that, with two exceptions, the project poses little potential for significant environmental impacts. Those potentially significant environmental impacts that have been identified are proposed to be mitigated to less than significant levels in all areas except Air Quality, which requires additional mitigation. Because of a disagreement between the applicant and staff concerning the mitigation needed for Air Quality impacts, staff cannot recommend approval of the project at this time. Staff's analysis also indicates that the project will comply with all applicable LORS, except in the area of Air Quality, where staff has concluded that the project currently does not conform with the requirements of the federal Clean Air Act. Staff has identified mitigation measures that would reduce impacts in the other area of concern, noise, to a less than significant level, but the applicant has not yet agree to the proposed mitigation, and may object to the proposed mitigation as an issue in evidentiary hearings. Below is a summary of the potential environmental impacts and LORS compliance for each technical area.

<b>Technical Discipline</b>	<b>Environmental/ System Impact</b>	<b>Conforms with LORS</b>
Air Quality	Unresolved	Unresolved
Biological Resources	Impacts mitigated	Yes
Cultural Resources	Impacts mitigated	Yes
Power Plant Efficiency	None	N/A
Power Plant Reliability	None	N/A
Facility Design	N/A	Yes
Geology, Mineral Resources, and Paleontology	Impacts mitigated	Yes
Hazardous Materials	Impacts mitigated	Yes
Land Use	N/A	Yes
Noise and Vibration	Impacts mitigated	Yes
Public Health	Impacts mitigated	Yes
Socioeconomics	None	Yes
Traffic and Transportation	Impacts mitigated	Yes
Transmission Line Safety	Impacts mitigated	Yes
Transmission System Engineering	Impacts mitigated	Yes
Visual Resources	Impacts mitigated	Yes
Waste Management	None	Yes
Water and Soil Resources	Impacts mitigated	Yes
Worker Safety	None	Yes

The following summarizes staff's position with respect to air quality and noise, the only areas of special concern during our Staff Assessment Addendum analysis. For a more complete discussion of concerns and conclusions for all environmental impacts, see the

Executive Summary of the July 16 Staff Assessment and the respective technical sections.

## **Air Quality**

As shown in the Air Quality section of this document, staff identified two significant air quality issues: 1) construction impacts, and 2) impacts during operation.

Staff has concluded that the potential construction emissions exceed State and Federal standards. These impacts occur only in the immediate vicinity of the construction site and are attributed to fugitive dust, and construction equipment emissions. This condition is likely to exist for several months of the project construction schedule, generally lasting from the date that site preparation starts through all excavating and paving activities. Staff has proposed mitigation measures to reduce this short term and localized impact to an acceptable level. Staff recommends monitoring air quality at the construction site during construction to ensure that these impacts are reduced to a less than significant level.

The project's oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOCs), sulfur dioxide (SO<sub>2</sub>) and particulate matter less than 10 microns in diameter (PM<sub>10</sub>) emission impacts resulting from the operation of the facility could be significant if left unmitigated. Staff finds that the emissions impacts have not been fully mitigated by the purchase of valid Emission Reduction Credits (ERCs). Therefore, staff recommends that the Applicant procure further mitigation beyond the mitigation provided. Until and unless additional ERCs are provided by the Applicant as mitigation for operational impacts, staff cannot recommend approval of the project.

The SJVAB currently exceeds federal and state air quality standards for ozone and PM<sub>10</sub> emissions, and, due to a lack of progress towards attainment, its ozone attainment status has been downgraded in the past year from nonattainment to severe nonattainment. In addition, the US Environmental Protection Agency (USEPA) now asserts that there is no valid State Implementation Plan (SIP) nor specific Air Quality Management Plan for the SJVAB that the San Joaquin Valley Air Pollution Control District (SJVAPCD) could use as guidance for reaching attainment.

Currently, neither the SJVAPCD's ozone nor PM<sub>10</sub> Air Quality Management Plans are approved by USEPA. The existing ozone AQMP is no longer valid as its timeline has expired. The ozone AQMP was for a serious nonattainment area, which due to the failure to achieve attainment, has since been redesignated as a severe nonattainment area. The original ozone AQMP called for the air basin to be in attainment of federal ozone standards by 2001, and, failing that, required the District to submit a severe nonattainment ozone AQMP to EPA by May 31, 2002. The District did not meet the required submittal date and is currently under an offset and federal highway funds sanction timeline to complete the revised AQMP for ozone and PM<sub>10</sub> within 18 and 24 months, respectively. The redesignation to severe nonattainment requires that the District provide the EPA with a plan to achieve attainment by 2005. The District is in the process of preparing a revised ozone AQMP, which is anticipated to request that the air basin be further redesignated as an extreme non-attainment area. This redesignation would change the required attainment demonstration date in the AQMP to 2010. The

PM<sub>10</sub> attainment plan that was submitted in 1997 did not provide a demonstration of attainment and was later withdrawn by the state. The EPA has set December 31, 2002 as the date that SJVAPCD must submit a new PM<sub>10</sub> attainment plan.

Because of the lack of a valid SIP for the SJVAB, and other critical factors, USEPA has asserted that many of the ERCs acquired by the Applicant as mitigation for the SJVEC operational air quality impacts are not valid and cannot be used as mitigation for any project. Specifically, USEPA has asserted that all NO<sub>x</sub> and Volatile Organic Compounds (VOC) ERCs issued before 1990, and all PM<sub>10</sub> ERCs issued before 1993 in the SJVAPCD are not valid offsets for a major new emissions source. ERCs earned by shutting down a major source are valid offsets for a new major source if those ERCs are included in an EPA-approved attainment plan. USEPA has determined that there are no approved attainment plans for ozone and PM<sub>10</sub> in the SJVAB, rendering major source shutdown ERCs invalid for ozone and PM<sub>10</sub> mitigation.

Additionally, USEPA has given notice to the applicant that it would be subject to significant monetary fines if it began construction of the SJVEC while relying on ERCs that USEPA considers invalid. Though the SJVAPCD continues to assert that all the ERCs proposed for mitigation by the applicant are valid, Energy Commission Staff agrees with USEPA that the ERCs identified by USEPA as invalid presently cannot be used as mitigation for the operation of the SJVEC. Staff would like to stress that its decision to withhold a recommendation for approval of the project is due to a disagreement between the SJVAPCD and USEPA that must be resolved before any new large power plant proposing similarly affected ERCs could be constructed and operated in the SJVAB.

Separately, staff has determined that operation of the SJVEC would result in a potentially significant air quality impact because of the sulfur dioxide that would be emitted from the plant's stacks. To mitigate this potential impact, staff has proposed that the applicant surrender additional SO<sub>2</sub> ERCs in order to offset the SO<sub>2</sub> emissions from the project at a 1:1 ratio. The Applicant has not yet agreed to this approach, which is an additional reason that staff cannot at this time recommend approval of the project.

Finally, the ERC package that was submitted for the SJVEC project contains an ERC (S-1340-2) that is specified in the license for the Pastoria Power Project as mitigation for the air emission impacts from that project, which is currently under construction in Kern County (see Commission Decision on the Pastoria Power Project, dated December 21, 2000, p.105). Though it appears that removing the ERC from the Pastoria project and applying it to the SJVEC is a matter of formal documentation, staff cannot recommend approval of the SJVEC until that documentation process is completed.

Staff is proposing that: the Applicant obtain valid post-1990 ERCs for NO<sub>x</sub> and VOC and valid post-1993 ERCs for PM<sub>10</sub>; the project's SO<sub>2</sub> emissions be mitigated with emissions reductions at a 1:1 ratio; and the project's ERCs be specifically committed by condition for project use. To avoid any future problems with ERCs that appear to be devoted to more than one project, staff recommends that prior to licensing, the Commission require the Applicant to specifically identify ERC certificate numbers and the quantities of reductions to be surrendered. If, prior to the surrender of the ERC certificates, which usually occurs at the commencement of operation, the Applicant plans to surrender

different ERC credits, then the Applicant can submit an amendment to the CEC Compliance office and a revision to the offset package can be processed.

## **Noise**

Though staff's conclusions and proposed mitigation for potential noise impacts have not changed from the July 16 Staff Assessment, the noise section in this Addendum now includes a short analysis of a noise mitigation proposal recently submitted by the applicant. The Applicant now proposes to buy out several residents living near the SJVEC site, and install noise abatement measures at other residents nearby, as a means of mitigating the noise impact that would be created by plant operation. To date, staff has received copies of seven letters from property owners in the vicinity of the proposed SJVEC site who indicate they have accepted offers by SJVEC to sound insulate their homes.

As was made clear in the July 16 Staff Assessment, mitigation of noise at the source (on-site) rather than at the receiver (off-site) is preferred. In other words, staff has determined that the applicant should first install all feasible on-site noise mitigation measures, and then and only then look to off-site mitigation measures, if needed, to reach a less-than-significant noise level at the affected homes near the plant site. Sound insulation of homes only benefits the interior noise environment; the noise environment outside the home is unaffected. The recent informal proposal by the applicant contains no feasibility analysis of on-site noise mitigation measures, so staff has no way of knowing if the preferred noise abatement plan is feasibly attainable. Until Staff can analyze the feasibility of installing on-site noise abatement measures towards the goal of attaining the noise levels specified in Condition of Compliance **Noise-6**, staff has no way of knowing whether the Applicant's recent informal proposal for off-site noise mitigation would be feasible or preferable compared to installing on-site noise abatement measures. Therefore, no modification to the Proposed Conditions of Certification regarding noise is warranted at this time, though staff anticipates that this issue will be a topic during evidentiary hearings.

## **ORGANIZATION OF THE ADDENDUM TO THE STAFF ASSESSMENT**

The Addendum to Staff Assessment of the San Joaquin Valley Energy Center AFC is organized in four chapters: the Executive Summary, Corrections and Additions, Response to Comments, and an Appendix to the SA Transmission System Engineering section containing staff's analysis of transmission system reconductoring projects that staff feels are a reasonably foreseeable result of approval of the project. The Corrections and Additions chapter contains all the changes and additions that were made to the SA sections, due to new information that was gathered by staff since release of the SA, or to comments from other governmental agencies or the Applicant. The Corrections and Additions chapter also contains three complete sections—Air Quality, General Conditions and Visual Resources—which contained extensive changes from the original sections and were not suitable for the underline/strike-out format used to show the changes and additions in other sections; figures for these sections are not reprinted in this Addendum, as they have not changed from those printed in the July 16 Staff Assessment.

The Response to Comments document contains staff's responses to comments from two governmental agencies, the Fresno County Department of Community Health and the Fresno County Planning & Resource Management Department, Development Services Division, as well as responses to selected comments from the Applicant. The reconductoring analysis appendix is an attempt by staff to provide information to the Commission and to the general public about the potential indirect impacts that could occur as a result of approval of the project. The reconductoring work is not considered part of the SJVEC project for several reasons: 1) that the work is beyond the first point of transmission interconnect, and therefore is out of the Commission's jurisdiction; 2) that the work will likely occur at least two years from now and will be conducted by another entity, Pacific Gas & Electric Company, making any attempt to exactly determine the potential impacts of such work speculative at best; and 3) that PG&E will apply to the California Public Utilities Commission for authority to conduct the work, making the CPUC the lead agency under the California Environmental Quality Act for determining potential impacts of the work and suitable mitigation.

## CORRECTIONS AND ADDITIONS TO THE SJVEC STAFF ASSESSMENT

Below are the changes and/or additions to the Staff Assessment for the San Joaquin Valley Energy Center Application for Certification. The changes or additions occurred based on: comments from government agencies or the Applicant; new information gathered since the SA publication date; errors in data used in the SA. New text is underlined, while deleted text is shown in “strike-through,” so that readers can quickly assess the changes in any given section. Staff will also publish electronic versions of the corrected SA sections on the project website at <http://www.energy.ca.gov/sitingcases/sanjoaquin/index.html>. In addition, because three sections from the Staff Assessment – Air Quality, General Conditions and Visual Resources – had extensive changes, those sections are reprinted in their entirety at the end of this chapter, without figures or appendices, which did not change from those printed in the July 16 Staff Assessment.

### BIOLOGICAL RESOURCES

Supplemental Testimony of Tom Scofield

1. Page 4.2-3., Table 1, is revised:

**BIOLOGICAL RESOURCES - Table 1**  
**Sensitive Species Known to Occur in the Project Vicinity**  
**(Calpine 2001a, Staff 2001-2)**

<u>Sensitive Plants</u>	<u>Status*</u>
Heartscale ( <i>Atriplex cordulata</i> )	CNPS 1B
Brittlescale ( <i>Atriplex depressa</i> )	CNPS 1B
Lesser saltscale ( <i>Atriplex miniscula</i> )	CNPS 1B
Palmate-bracted bird's-beak ( <i>Cordylanthus palmatus</i> )	FE, CE, CNPS 1B
Recurved larkspur ( <i>Delphinium recurvatum</i> )	CNPS 1B
Munz's tidytips ( <i>Layia munzii</i> )	CNPS 1B
San Joaquin woolythreads ( <i>Monolopia congdonii</i> )	FE, CNPS 1B
<b><u>Sensitive Wildlife</u></b>	<b><u>Status*</u></b>
Ciervo Aegilian scarab beetle ( <i>Aegialia concinna</i> )	<u>none</u>
San Joaquin dune beetle ( <i>Coelus gracilis</i> )	<u>none</u>
Giant garter snake ( <i>Thamnophis gigas</i> )	<u>FT, CT</u>
Blunt-nosed leopard lizard ( <i>Gambelia sila</i> )	<u>FE, CE</u>
California horned lizard ( <i>Phrynosoma coronatum frontale</i> )	<u>CSC</u>
Northern harrier ( <i>Circus cyaneus</i> )	<u>CSC</u>
Cooper's hawk ( <i>Accipiter gentilis</i> )	<u>FSC, CSC</u>
Swainson's hawk ( <i>Buteo swainsoni</i> )	<u>CT</u>
Burrowing owl ( <i>Athene cunicularia</i> )	<u>FSC, CSC</u>
California horned lark ( <i>Eremophila alpestris actia</i> )	<u>CSC</u>

Mountain plover ( <i>Charadrius montanus</i> )	<u>FSC, CSC</u>
Fresno kangaroo rat ( <i>Dipodomys nitratoides exilis</i> )	<u>FE, CE</u>
Giant kangaroo rat ( <i>Dipodomys ingens</i> )	<u>FE, CE</u>
San Joaquin antelope squirrel ( <i>Ammospermophilus nelsoni</i> )	<u>CT</u>
San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	<u>FE, CT</u>

**\*STATUS LEGEND:** FE = Federally listed Endangered; FT = Federally listed Threatened; FPT = Federal proposed Threatened; California Native Plant Society (CNPS 2001) CNPS 1B = Rare and endangered plants of California and elsewhere; CE = State listed Endangered, CT = State listed Threatened; and CSC = State Species of Special Concern.

2. Page 4.2-3, last paragraph, is revised:

## LOCAL

Several plant and animal species listed under state and/or federal Endangered Species Acts potentially occur in the project region (Biological Resources Table 1). Of these species, six are expected to potentially occur in the project vicinity, including the federally and state threatened giant garter snake (*Thamnophis gigas*), the federally and state endangered blunt-nosed leopard lizard (~~*Phrynosoma coronatum frontale*~~ *Gambelia sila*), the state threatened Swainson's hawk (*Buteo swainsoni*), the federal and state species of special concern burrowing owl (*Athene cunicularia*), the federal and state species of special concern mountain plover (*Charadrius montanus*), and the federally endangered and state threatened San Joaquin kit fox (*Vulpes macrotis mutica*). In addition, two state bird species of special concern [Northern harrier (*Circus cyaneus*) and Cooper's hawk (*Accipiter gentilis*)], were observed by staff in the project vicinity and may nest within or near the project area.

3. Page 4.2-11, paragraph 1, is revised:

## **AIR QUALITY IMPACTS TO BIOLOGICAL RESOURCES**

Some terrestrial ecosystems that are nitrogen limited (e.g. serpentine grasslands) respond strongly to incremental additions of nitrogen, and exhibit changes in productivity, species composition, and nutrient retention (Weiss 1999).

4. Page 4.2-16, Condition of Certification BIO-2, is revised.
  4. Inspect active construction areas where animals may have become trapped prior to construction ~~prior to construction commencing each day. At the end of the day.~~ Inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (parking lots) for animals in harms way;

5. Page 4.2-17, **BIO-4**, is revised:

**BIO-4** The project owner shall develop and implement a CPM approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, construction, and operation, are informed about sensitive biological resources associated with the project.

Protocol: The WEAP must:

- a. Be developed by or in consultation with the Designated Biologist and can consist of ~~either an on-site or training presentation, a training center presentation, or a video presentation in which supporting~~ Training presentations will be supported by written materials is and made available to all participants;
6. In response to the edits made to Condition of Certification BIO-2 (Item # 4 above), Condition of Certification BIO-5 is revised:
- I. Duration for each type of monitoring activity (e.g., pre-construction inspection surveys) and a description of monitoring methodologies and frequency;
7. Page 4.2-19, Condition of Certification BIO-5, is revised to delete Item k.

## CULTURAL RESOURCES

### Supplemental Testimony of Judy McKeehan and Gary Reinoehl

1. Page 4.3-1 is revised to add the following paragraph at the end of the Introduction section:

The applicant provided comments on the SA. The applicant requested that sentences indicating that information had not been provided be deleted. Staff revised paragraphs in the historical and archaeological impacts section to identify historic associations that were actually contacted by the applicant rather than simply deleting the statement that staff was waiting for information. Staff also revised the first sentence to Cul-6 to reflect the project owner's responsibility to ensure compliance with the entire condition. The applicant requested this change for a portion of the condition, but staff thought it more appropriate that the change reflect the project owner's responsibility for compliance with the entire condition.

2. Page 4.3-4, paragraph 1, is revised:

Commission staff requested a list of local historical societies and archeological societies that the Applicant contacted as part of their background research. The Energy Commission has not yet received the list. The Applicant has contacted the Fresno County Historical Society, the Fresno County Library (SJVEC 2001a 8.3.14-16), the CSU Fresno Madden Library, and Fresno City/County Free Library Fresno History Room, and UC Davis agricultural history databases (SJVEC 2002b).

3. Page 4.3-8, paragraph 1, is revised:

Buried archaeological resources could be encountered during project construction. The project site is located in an alluvial plain and has been subject to unspecified years of agricultural activity. An alluvial deposit may contain buried prehistoric cultural resources. Three sites containing human burials or remains were previously recorded within one mile of the project. The Applicant has contacted the Fresno County Historical Society, the Fresno County Library (SJVEC 2001a 8.3.14-16), the CSU Fresno Madden Library, and Fresno City/County Free Library Fresno History Room, and UC Davis agricultural history databases (SJVEC 2002b). Staff is not aware of any archaeological societies that were contacted.

4. Because the word "Verification" was inadvertently omitted from the Cultural Resources Conditions of Compliance, the Conditions of Compliance are reprinted here in their entirety. Additionally, Cul-6 on Pages 4.3-15 is revised as indicated in underlined text:

## PROPOSED CONDITIONS OF CERTIFICATION

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### CULTURAL RESOURCE SPECIALIST

**CUL-1** Prior to the start of ground disturbance, the project owner shall provide the California Energy Commission Compliance Project Manager (CPM) with the name and resume of its Cultural Resources Specialist (CRS), and one alternate CRS, if an alternate is proposed, for approval. The CRS shall be responsible for implementation of all cultural resources conditions of certification.

Protocol: 1. The resume for the CRS and alternate, shall include information that demonstrates that the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, 36 CFR Part 61 are met. In addition, the CRS shall have the following qualifications.

- a. The technical specialty of the CRS shall be appropriate to the needs of this project and shall include a background in anthropology, archaeology, history, architectural history or a related field;
  - b. The background of the CRS shall include at least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California;
  - c. The resume shall include the names and phone numbers of contacts familiar with the CRS's work on referenced projects.
2. The CRS may obtain qualified cultural resource monitors (CRM) to monitor as necessary on the project. CRM shall meet the following qualifications.
- a. A BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
  - b. An AS or AA in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or
  - c. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historic archaeology or a related field and two years of monitoring experience in California.
3. The project owner shall ensure that the CRS completes any monitoring, mitigation and curation activities necessary to this project and fulfills all the requirements of these conditions of certification. The project owner shall also ensure that the CRS obtains additional technical specialists, or additional CRM, if needed. The project owner shall also ensure that the CRS evaluates any cultural resources that are newly discovered or that may be effected in an unanticipated manner for eligibility to the California Register of Historic Resources (CRHR).

Verification: 1. At least 30 days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of CRS and

alternate CRS, if an alternate (1) is proposed, to the CPM for review and approval.

2. If the CPM determines the proposed CRS to be unacceptable, the project owner shall submit another individual's name and resume for consideration. If the CPM determines the proposed alternate to be unacceptable, the project owner may submit another individual's name and resume for consideration. At least 10 days prior to the termination or release of the CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval.
3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM, identifying the CRMs and attesting to the qualifications. The letter shall be provided one week prior to the CRM beginning on-site duties.
4. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions of certification.

## **Maps and Schedules**

- CUL-2** 1. Prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps will include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall approve all submittals.
2. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes to the CRS and the CPM. Maps shall identify all areas of the project where ground disturbance is anticipated.
  3. If construction of the project will proceed in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the CPM.
  4. At a minimum, the CRS shall consult weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.
  5. The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

**Verification:** 1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with the maps and drawings.

2. If this is to be a phased project, the project owner shall also provide to the CRS and CPM a letter identifying the proposed schedule of the ground disturbance or construction phases, and the associated dates for submittal of maps and drawings, along with the initial maps and drawings.
3. If there are changes to the footprint for a project phase, revised maps and drawings shall be provided to the CRS and CPM at least 15 days prior to start of ground disturbance for that phase. If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

### **Worker Environmental Awareness Program**

**CUL-3** Worker Environmental Awareness Program (WEAP) shall be provided, on a weekly basis, to all new employees starting prior to the beginning and for the duration of ground disturbance. The training may be presented in the form of a video. The training shall include:

- (a) a discussion of applicable laws and penalties under the law;
- (b) samples or visuals of artifacts that might be found in the project vicinity;
- (c) information that the CRS, alternate CRS or CRM has the authority to halt construction in the event of a discovery or unanticipated impact to a cultural resource;
- (d) instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the CRS or CRM;
- (e) an informational brochure that identifies reporting procedures in the event of a discovery;
- (f) an acknowledgement form signed by each worker indicating that they have received the training;
- (g) and a sticker that shall be placed on hard hats indicating that environmental training has been completed.

**Verification:** The project owner shall provide in the Monthly Compliance Report the WEAP Certification of Completion form of persons who have completed the training in the prior month and a running total of all persons who have completed training to date.

### **Cultural Resource Monitoring and Mitigation Plan**

**CUL-4** Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by the CRS, to the CPM for review and approval. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources.

Protocol: The CRMMP shall include, but not be limited to, the following elements and measures:

1. The following statement shall be placed in the Introduction:

Any discussion, summary, or paraphrasing of the conditions in this CRMMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. If there appears to be a discrepancy between the conditions and the way in which they have been summarized, described, or interpreted in the CRMMP, the conditions, as written in the Final Decision, supercede any interpretation of the Conditions in the CRMMP. The Cultural Resources conditions of Certification are attached as an appendix to this CRMMP.
2. A proposed general research design that includes a discussion of research questions and testable hypotheses applicable to the project area. A refined research design will be prepared for any resource where data recovery is required.
3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during ground disturbance, construction, and post-construction analysis phases of the project.
4. Identification of the person(s) expected to perform each of the tasks; a description of each team member's qualifications and their responsibilities; and the reporting relationships between project construction management and the mitigation and monitoring team.
5. A discussion of the inclusion of Native American observers or monitors, the procedures to be used to select them, and their role and responsibilities.
6. A discussion of all avoidance measures such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and/or operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of construction and how long they will be needed to protect the resources from project-related effects.
7. A discussion of the requirement that all cultural resources encountered will be recorded on a DPR form 523 and mapped (may include photos). In addition, all archaeological materials collected as a result of the archaeological investigations shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections" into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79.
8. A discussion of any requirements, specifications, or funding needed for curation of the materials to be delivered for curation and how requirements, specifications and funding will be met. Also the name and phone number of the contact person at the

institution shall be included. In addition, include information indicating that the project owner will pay all curation fees and that any agreements concerning curation will be retained and available for audit for the life of the project.

9. A discussion of the availability and the CRS's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.

10. A discussion of the proposed Cultural Resource Report, which shall be prepared according to Archaeological Resource Management Report (ARMR) Guidelines.

**Verification:** At least 30 days prior to the start of ground disturbance, the project owner shall provide the CRMMP to the CPM for review and approval. A letter shall be provided to the CPM indicating that the project owner will pay curation fees for any materials collected as a result of the archaeological studies. Ground disturbing activities may not commence until the CRMMP is approved.

## **Surveys, Avoidance and Evaluation**

**CUL-5** (1) Prior to the start of ground disturbance within all right of ways, construction laydown area, access roads, or other areas not previously surveyed for the project, cultural resource surveys shall be conducted.

(2) If cultural resources are identified in the right of ways, construction laydown area, access roads, or other areas, then avoidance measures shall be provided. If the resources cannot be avoided, then the cultural resource shall be evaluated for eligibility for the CRHR prior to ground disturbance within 100 feet of the identified resource.

(3) If a cultural resource cannot be avoided and the resource is determined by the Energy Commission to be eligible for the CRHR, then mitigation measures must be implemented to reduce the impacts to less than significant prior to any ground disturbing activities within 100 feet of the identified resource.

**Verification:** 1. At least 30 days prior to start of ground disturbance in the areas described in (1) above, reports (in ARMR format) on the surveys conducted shall be submitted to the CPM for review and approval.

2. The survey report shall include proposed avoidance measures. If the resource cannot be avoided, the survey report(s) shall include an evaluation of the cultural resource(s) for eligibility to the CRHR.

3. Preliminary report(s) (ARMR format) documenting the implementation of mitigation measures shall be provided to the CPM for review and approval prior to ground disturbing activities within 100 feet of the resource. The final report on

implementation of mitigation measures shall be incorporated in the Cultural Resources Report (CRR) or appended to the CRR.

## **Monitoring Activities**

**CUL-6** (1) The project owner shall ensure that the CRS, alternate CRS, or CRM(s) shall monitor ground disturbance activities full time in the vicinity of the project site, linears and laydown areas, access roads or other ancillary areas to ensure there are no impacts to undiscovered resources or known resources affected in an unanticipated manner. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter providing a detailed justification for the decision to reduce the level of monitoring shall be provided to the CPM for review and approval.

(2) CRM(s) shall keep a daily log of any monitoring or cultural resource activities and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities. The CRS may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.

(3) The CRS shall notify the project owner and the CPM within 24hrs., by telephone or e-mail, of any incidents of non-compliance with any cultural resources conditions of certification. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions of certification.

Cultural resource monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a CRM from duties assigned by the CRS or direction to a CRM to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these conditions of certification.

(4) A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Informational lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that will be monitored.

**Verification:** 1. During the ground disturbance phases of the project, if the CRS wishes to reduce the level of monitoring occurring at the project, a letter identifying the area(s) where the CRS recommends the reduction and justifying the reductions in monitoring shall be submitted to the CPM for review and approval.

2. During ground disturbance, the project owner shall include in the MCRs copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring. Copies of daily logs shall be retained on-site and made available for audit by the CPM.

3. Within 24 hours of recognition of a non-compliance issue, the CRS shall notify the CPM by telephone of the problem and of steps being taken to resolve the problem. A report that describes the issue, resolution of the issue, and the effectiveness of the resolution measures shall be provided in the next MCR.
4. One week prior to ground disturbance, in areas where there is a potential to discover Native American cultural resources, the project owner shall send notification to the CPM identifying the person(s) retained to conduct Native American monitoring. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM who will initiate a resolution process.

### **Dry Creek Canal and Tranquillity Irrigation District Reservoir**

**CUL-7** If the Dry Creek Canal or the Tranquillity Irrigation District Reservoir cannot be returned to their original contour and appearance, then the Dry Creek Canal and/or the Tranquillity Irrigation District Reservoir shall be evaluated for the CRHR prior to ground disturbance. If Dry Creek Canal or the Tranquillity Irrigation District Reservoir is eligible for the CRHR, then the project owner shall propose and submit mitigation measures to the CPM for approval. The mitigation measures shall be completed prior to alteration of the Dry Creek Canal and/or the Tranquillity Irrigation District Reservoir.

**Verification:** If the Dry Creek Canal or the Tranquillity Irrigation District Reservoir cannot be returned to the original contour and appearance, at least 30 days prior to project-related ground disturbance associated with the Dry Creek Canal and/or the Tranquillity Irrigation District Reservoir the project owner shall provide to the CPM for review and approval a determination of eligibility for the resource that cannot be restored to its original appearance and the mitigation measures that would reduce this impact to less than significant.

### **Cultural Resources Report**

**CUL-8** The project owner shall submit the Cultural Resources Report (CRR) to the CPM for approval. The CRR shall report on all field activities including dates, times and locations, findings, samplings and analysis. All survey reports, DPR 523 forms and additional research reports not previously submitted to the California Historic Resource Information System (CHRIS) shall be included as an appendix to the CRR.

**Verification:** The project owner shall submit the subject CRR within 90 days after completion of ground disturbance (including landscaping). Within 10 days after CPM approval, the project owner shall provide documentation to the CPM that copies of the CRR have been provided to the curating institution (if archaeological materials were collected), the State Historic Preservation Office and the CHRIS.



## GEOLOGY, MINERAL RESOURCES AND PALEONTOLOGY

Supplemental Testimony of Dr. Patrick Pilling, P.E.

Note, most of the clarifications in the following conditions have been made to be consistent with conditions recently revised in other staff assessments. Due to the numerous changes, the entire Paleontology conditions of certification are presented below:

**PAL-1** The project owner shall provide the CPM with the resume and qualifications of its Paleontological Resource Specialist (PRS) ~~and Paleontological Resource Monitors (PRMs)~~ for review and approval. If the approved PRS ~~or one of the PRMs~~ is replaced prior to completion of project mitigation and report, the project owner shall obtain CPM approval of the replacement. The project owner shall submit to the CPM to keep on file, resumes of the qualified Paleontological Resource Monitors (PRMs). If the PRMs are replaced, the resumes shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of the contacts provided for checking employment or qualifications. The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontologists (SVP) guidelines of 1995. Demonstration of the experience of the PRS shall include the following:

- 1) institutional affiliations or appropriate credentials and college degree;
- 2) ability to recognize and ~~recover~~ collect fossils in the field;
- 3) local geological and biostratigraphic expertise;
- 4) proficiency in identifying vertebrate and invertebrate fossils and;
- 5) ~~publications in a scientific journal~~ at least three years of paleontological resource mitigation and field experience in California, and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS shall obtains qualified paleontological resource monitors to monitor as necessary on the project. Paleontologic resource monitors ~~(PRMs)~~ shall have the equivalent of the following qualifications:

- 1) BS or BA degree in geology or paleontology and one year experience monitoring in California; or
- 2) AS or AA in geology, paleontology or biology and four years experience monitoring in California; or

- 3) Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

**Verification:** (1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work. (2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM attesting to the monitor's qualifications for approval. The letter shall be provided to the CPM no later than one week prior to the monitor beginning on-site duties. (3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

**PAL-2** The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan, and the plan and profile drawings for the utility lines would normally be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances, and can be on a scale ranging between 1 inch = 40 feet to 1 inch = 100 feet. If the footprint of the power plant or linear facility changes, the project owner shall provide maps and drawings reflecting these changes to the PRS and CPM.

If construction of the project will proceed in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Prior to work commencing on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM shall consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.

**Verification:** (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings. (2) If there are changes to the footprint of the project, revised maps and drawings shall be provided at least 15 days prior to the start of ground disturbance. (3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

**PAL-3** The project owner shall ensure that the PRS shall prepares, and the project owner shall submit to the CPM for review and approval, a Paleontological

Resources Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting and sampling activities and may be modified with CPM approval. This document shall be used as a basis for discussion in the event that on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of the Vertebrate Paleontologists (SVP, 1995) and shall include, but not be limited to, the following:

- 1) Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery collection; identification and inventory; preparation of final reports; and transmittal of materials for curation will be performed according to the PRMMP procedures;
- 2) Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and all conditions for certification;
- 3) A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
- 4) An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained beds;
- 5) A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan schedule for the monitoring;
- 6) A discussion of the procedures to be followed in the event of a significant fossil discovery, including notifications;
- 7) A discussion of equipment and supplies necessary for recovery collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- 8) Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum,

which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and

- 9) Identification of the institution that has agreed to receive any data and fossil materials ~~recovered~~ collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and,
- 10) A copy of the paleontological conditions of certification.

**Verification:** At least 30 days prior to ground disturbance, the project owner shall submit the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS, and acceptance of the project owner evidenced by a signature.

**PAL-4** Prior to ground disturbance and for the duration of construction, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for all project managers, construction supervisors and workers who are involved with or operate ground disturbing equipment or tools. Workers ~~involved in ground disturbing activities shall not excavate in sensitive units shall not operate equipment prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick-off for those mentioned above. Following initial training, a CPM approved video or in-person training may be used for new employees.~~ The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

The Worker Environmental Awareness Program (WEAP) shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. ~~In-person training shall be provided for each new employee involved with ground disturbing activities, while these activities are occurring in highly sensitive geologic units, as detailed in the PRMMP. The in-person training shall occur within four days following a new hire for highly sensitive sites and as established by the PRMMP for sites of moderate, low, and zero sensitivity. Provisions will be made to provide the WEAP training to workers not fluent in English.~~ The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. For training in locations of high sensitivity, ~~the PRS shall provide~~ good quality photographs or physical examples of vertebrate fossils that may be expected in the area shall be provided;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A Certification of Completion of WEAP form signed by each worker indicating that they have received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

**Verification:** (1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP including the brochure with the set of reporting procedures the workers are to follow. (2) At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning on using a video for interim training. (3) If an alternate paleontological trainer is requested by the owner, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval. Alternate trainers shall not conduct training prior to CPM authorization. (4) The project owner shall provide in the Monthly Compliance Report the WEAP copies of the Certification of Completion forms with the names of those trained and the trainer or type of ~~for each~~ training offered that month. The Monthly Compliance Report shall also include a running total of all persons who have completed the training to date.

**PAL-5** The project owner shall ensure that the PRS and PRM(s) ~~shall~~ monitor, consistent with the PRMMP, all construction-related grading, excavation, trenching, and augering in areas where potentially fossil-bearing materials have been identified. In the event that the PRS determines full time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner ~~PRS~~ shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) ~~shall~~ have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring different from the accepted plan ~~schedule~~ presented in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring. The letter or email shall include the justification for the change in monitoring and submitted to the CPM for review and approval.
2. The project owner shall ensure that the PRM(s) ~~shall~~ keep a daily log of monitoring of paleontological resource activities. The PRS may informally

discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS ~~shall immediately notify~~ notifies the project owner and the CPM of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM immediately (no later than the following morning after the find, or Monday morning in the case of a weekend) of any halt of construction activities.

The project owner shall ensure that the PRS ~~shall prepares~~ a summary of the monitoring and other paleontological activities that will be placed in the Monthly Compliance Reports. The summary will include the name(s) of PRS or monitor(s) active during the month; general descriptions of training and monitored construction activities and general locations of excavations, grading, etc. A section of the report will include the geologic units or subunits encountered; descriptions of sampling within each unit; and a list of fossils identified in the field. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring including any incidents of non-compliance and any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the project shall include an explanation ~~justification~~ in summary as to why monitoring was not conducted.

**Verification:** The project owner shall ensure that the PRS ~~shall submits~~ the summary of monitoring and paleontological activities in the Monthly Compliance Report.

**PAL-6** The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground disturbing activities. The PRR shall include an analysis of the ~~recovered~~ collected fossil materials and related information and submitted to the CPM for review and approval.

The report shall include, but not be limited to, a description and inventory of ~~recovered~~ collected fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated.

**Verification:** Within 90 days after completion of ground disturbing activities, including landscaping, the project owner shall submit the Paleontological Resources Report under confidential cover.

**PAL-7** The project owner, through the designated PRS, shall ensure the recovery, preparation for analysis, analysis, identification and inventory, the preparation

for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

**Verification:** The project owner shall maintain in their compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved PRR. The project owner shall be responsible to pay any curation fees charged by the museum for fossils collected and curated as a result of paleontological monitoring and mitigation.

## HAZARDOUS MATERIALS

Supplemental Testimony of Alvin J. Greenberg, Ph.D., and Rick Tyler

1. Page 4.4-18, **HAZ-3**, is revised:

**HAZ-3** If aqueous ammonia is used, the project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia to the CPM for approval. If hydrogen is used, the project owner shall develop and implement a Safety Management Plan for delivery of hydrogen. The plans shall include procedures, protective equipment requirements, training and a checklist. The Safety Management Plan for hydrogen shall also include specifics about the storage and handling of hydrogen, including a plot plan describing the location of the storage, and of other flammable materials, ~~measures for avoidance of areas that could be affected by a turbine over-speed accident and seismic design criteria for the hydrogen storage and handling systems.~~ It shall also include a section describing all measures to be implemented to prevent mixing of aqueous ammonia with incompatible hazardous materials.

2. Page 4.4-18, **HAZ-4**, is revised:

**HAZ-4** The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either case, a secondary containment basin capable of holding ~~450~~125 percent of the storage volume shall protect the storage tank plus the volume associated with 24 hours of rain assuming the 25-year storm as specified in the AFC.

3. Page 4.4-19, **HAZ-10**, is revised:

**HAZ-10** The project owner shall ensure that the hydrogen gas storage cylinders are stored in an area out of the area that could be affected by a turbine over-speed event and that no combustible or flammable material is stored within ~~400~~50 feet of the hydrogen cylinders.

## LAND USE

Supplemental Testimony of Daniel Gorfain and Eileen Allen

1. Page Numbers:

Numbers were changed from 5.4-# to 4.5-#.

2. Page 5.4-6 (4.5-6), is revised to add the following at the end of the **FRESNO COUNTY ZONING ORDINANCE** section:

Section 873 of the County's Zoning Ordinance requires the County to make certain findings when issuing a Conditional Use Permit (CUP) for projects such as the SJVEC's natural gas and cooling water supply lines. These findings are:

1. That the site of the proposed use is adequate in size, shape and all other features, to accommodate said use in conjunction with land and uses in the project vicinity.
2. That the site of the proposed use relates to streets and highways adequate in street and pavement type to carry the quality and type of traffic generated by the proposed use.
3. That the proposed use will have no adverse effect on the abutting property and surrounding neighborhood or the permitted use thereof.
4. That the proposed development is consistent with the General Plan.

3. Page 5.4-11 (4.5-11), first paragraph, is revised:

The footprint of the proposed SJVEC, including associated facilities, improvements and buffer areas, ~~which would allow adjacent lots and/or parcels to be developed to their full extent as presently zoned,~~ may extend to more than one of the lots acquired by the project owner. In addition to mitigating for significant environmental impacts, the Warren-Alquist Act (PRC Section 25523(a)) authorized the Commission to condition its power plant certifications on reasonable terms and conditions "in order to protect environmental quality and assure public health and safety." Condition LAND-1 is designed to ensure that, consistent with good planning and zoning practices, the plant and its ancillary facilities, including setbacks around them, will be located on one parcel under one ownership and that no portion of the land on which they are located could be sold off without government approval during the project's lifetime. Also, the clear definition of the boundaries of the adjacent parcels would help establish the extent of development for which its owners could expect approval by the City of San Joaquin under existing zoning. This would help avoid potential adverse environmental impacts which could result from conflicts with new or existing adjacent industrial or commercial development and help assure public health and safety that all of these

~~facilities will be located on a single legal lot as an integral part of a single development under the consolidated ownership of the project owner.~~

Staff concludes that the proposed project is consistent with the City's LORS.

4. Page 5.4-12 (4.5-12), fourth paragraph under **Fresno County Land Use LORS and Policies**, is revised:

~~Consequently, staff concludes that the following findings which would ordinarily be made by the County when issuing its conditional use permit (CUP) for the natural gas and cooling water supply lines, can be made by the Commission for the SJVEC project. In Fresno County linear facilities generally require a conditional use permit (CUP) and related findings by the County planning staff. However, since the Commission is the lead agency for the SJVEC project, the Commission will make these findings. Staff has recommended findings after discussing them with the County staff on September 9, 2002 (Perkins, 2002). These findings are:~~

5. Page 5.4-17 (4.5-17), **LAND-1**, is revised:

**LAND-1** ~~Prior to the start of construction,~~ The project owner shall obtain the necessary approval(s) from the City and complete any lot merger or lot line adjustments necessary to ensure that the proposed project, including associated facilities and improvements, but excluding linear facilities, and buffer areas that would allow adjacent parcels to be developed to their full extent as presently zoned, will be located on a single legal lot. That single lot shall include sufficient buffer areas to protect the health and safety of current or future occupants of adjacent lots. It shall remain a single lot for the life of the power plant.

**Verification:** At least 30 days prior to the start of construction, the Project Owner shall provide the CPM with proof of completion of the above adjustments or satisfactory evidence that no such adjustments are necessary. Prior to submitting an application to the City, the project owner shall submit the proposed lot configuration to the CPM for review and approval.

6. Page 5.4-17, **LAND-2**, is revised:

**LAND-2** Prior to the start of construction, the project owner shall submit an agricultural mitigation plan subject to the CPM for approval. The agricultural mitigation plan shall describe how the project owner will mitigate for the permanent conversion of an estimated 25 acres of agricultural land to non-agricultural use for the construction of the power generation facility.

7. Page 5.4-21 (4.5-21) is revised to add the following reference:

Perkins, Richard. 2002. Personal communication between Richard Perkins, Planner, Fresno County Planning and Resources Management Department and Dan Gorfain, Aspen Environmental Group. September 9, 2002..

## NOISE

### Supplemental Testimony of Bill Thiessen and Steve Baker

1. Page 4.3-16 is revised to add the language below immediately above the "Tonal and Intermittent Noise" heading. For clarity, the paragraph that appears immediately above the additional language is added to provide context. The new language is underlined:

Depending on the situation and willingness of the receptors, staff may also consider mitigation measures applied to the houses to help ensure that normal indoor household activities would not be adversely affected by plant operation noise. In such cases, staff may consider 1) mitigating the project to a reasonable noise level, and 2) accepting an applicant's proposal to provide noise mitigation measures for all residences exposed to plant noise greater than the impact threshold noise level (normally a 5 dBA increase). Such mitigation can include enhanced insulation, acoustical windows, solid core doors, and/or air conditioning.

The Applicant submitted an informal proposal to Energy Commission staff in December 2002 proposing to buy out several residents living near the SJVEC site, and install noise abatement measures at other residents nearby, as a means of mitigating the noise impact that would be created by plant operation. To date, staff has received copies of seven letters from property owners in the vicinity of the proposed SJVEC site who indicate they have accepted offers by SJVEC to sound insulate their homes.

Mitigation of noise at the source rather than at the receiver is preferred. Sound insulation of homes only benefits the interior noise environment; the noise environment outside the home is unaffected. Staff has seen no feasibility analysis of on-site noise mitigation measures, as proposed above, so staff has no way of knowing if the preferred noise abatement measure is feasibly attainable. Until Staff can analyze the feasibility of installing on-site noise abatement measures towards the goal of attaining the noise levels specified in **Noise-6**, staff has no way of knowing whether the Applicant's recent informal proposal for off-site noise mitigation would be feasible or preferable compared to installing on-site noise abatement measures. Therefore, no modification to the Proposed Conditions of Certification regarding noise is warranted at this time.

In addition, the Applicant did not submit a study showing that it is feasible to sound insulate any of these seven homes. Not all residences are suitable for sound insulation, depending on construction and condition. An inspection of the homes by an architect and noise consultant would be necessary to make that determination. The "upgrades" listed in the letters that SJVEC would be willing to pay for may be inadequate. At a minimum, sound-rated windows and doors are necessary to provide an adequate amount of noise reduction in a home. Dual-pane windows and standard solid core doors with standard thresholds and seals may not provide adequate amounts of noise reduction. Before making a final determination about the feasibility of on-site vs. off-site noise mitigation, staff would require significant

additional information about the feasibility of installing on-site noise abatement measures, as well as about the suitability and effectiveness of specific abatement measures proposed for installation at nearby residents.

## **SOCIOECONOMICS**

### Supplemental Testimony of Daniel Gorfain

1. Page 4.8-12, paragraph 3, is revised:

~~The Applicant is also planning to hold informational meetings designed to maximize procurement in Fresno County. On April 11, 2002, the Applicant held an informational meeting to explain its procurement needs and procedures in order to assist local vendors to participate effectively in its bidding process. These meetings will include~~ This meeting included city managers and chambers of commerce throughout the County, including Hispanic chambers, the Fresno County Economic Development Corporation, and organizations such as Workforce Connections and the I-5 Business Development Corridor Association (Argentine 2002).

## SOIL AND WATER RESOURCES

Supplemental Testimony of Joe Crea, Charlie Moore, Jim Thurber,  
Aurie Patterson and John Kessler

1. Page 4.9-6, is revised to add the following paragraph at the end of the **SOIL AND WATER CONTAMINATION** section:

On February 26, 2002, the CEC Waste Management staff requested that the applicant conduct a Phase II ESA due to the past agricultural practices and the concern for potential elevated levels of pesticides on the SJVEC site. The applicant submitted a document related to Soil Sampling and Analysis Results at the project site. The results indicate that pesticides were detected at the site and staff is concerned that the levels of such pesticides may be elevated.

2. Page 4.9-19, Item g., first paragraph, is revised:

The applicant submitted a Soil Sampling and Analysis Results for the site as a result of a request for a Phase II ESA from the CEC Waste Management staff. Staff concurs with the Waste Management staff's concerns that elevated levels of pesticides may be present onsite. However, this impact would be mitigated, as the applicant will address this issue within the Construction Stormwater Pollution Prevention Plan via Best Management Practices related to runoff control and water quality protection. Also, please refer to the **Waste Management** section of this SA for further discussion and Conditions established to mitigate this impact. Based on county records and the Phase I Environmental Site Assessment (Phase I ESA) that was prepared for the proposed SJVEC, there are two nearby sites where recognized soil contamination has occurred. Although the potential for additional soil and groundwater contamination has been identified, it appears unlikely that either soil or groundwater has been affected at the proposed SJVEC site. This initial conclusion is reached based on the proximity of the SJVEC to the two sites. They are located approximately 0.75 miles from the proposed SJVEC.

3. Page 4.9-23, Soil & Water 3, Verification, is revised:

**Verification:** At least 60 days prior to the start of project operation, the SWPPP for Industrial Activity and a copy of the Notice of Intent for operating under the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity filed with the SWRCB, shall be submitted to the CPM the project owner shall submit a copy of the SWPPP for Industrial Activities to the CPM for review and approval and to the Central Valley Regional Water Quality Control Board for review and comment. Approval of the final SWPPP plan by the CPM must be received prior to initiation of project operation.

4. Pages 4.9-22 through 4.9-24, Proposed Conditions of Compliance, have been revised to add the word "Verification" in the final paragraphs of each condition.

For clarity, the entire **Proposed Conditions of Certification** for the Soil & Water Resources section is reprinted below with the correct Verification format:

## **PROPOSED CONDITIONS OF CERTIFICATION**

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The following conditions have been developed for the project:

**SOIL & WATER 1:** Prior to beginning any site mobilization activities, the project owner shall obtain Energy Commission Staff approval of an Erosion Control Plan. The Erosion Control Plan shall include and be consistent with the standards normally required in the City of San Joaquin's Grading and Excavation Permit, for all project elements. The plan shall be submitted for the Compliance Project Manager's (CPM's) approval, and for review and comment by the City of San Joaquin. The plan will also include changes, as appropriate, incorporating the final design of the project.

**Verification:** The Erosion Control Plan shall be submitted to the CPM and to the City of San Joaquin for review and comments at least 60 days prior to start of any site mobilization activities. The CPM must approve the final Erosion Control Plan prior to the initiation of any site mobilization activities.

**SOIL & WATER 2:** Prior to beginning any site mobilization activities, the project owner shall submit a Notice of Intent for construction under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity to the State Water Resources Control Board (SWRCB), and obtain Energy Commission Staff approval of the related Storm Water Pollution Prevention Plan (SWPPP) for Construction Activity. The SWPPP will include final construction drainage design and specify BMP's for all on and off-site SJVEC project facilities. This includes final site drainage plans and locations of physical BMP facilities/devices.

**Verification:** At least 60 days prior to the start of any site mobilization activities, the SWPPP for Construction Activity and a copy of the Notice of Intent for construction under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity filed with the SWRCB, shall be submitted to the CPM. Approval of the SWPPP by the CPM must be received prior to initiation of any site mobilization activities.

**SOIL & WATER 3:** Prior to initiating project operation, the project owner shall submit and obtain CPM approval of the related Storm Water Pollution Prevention Plan (SWPPP) for Industrial Activity. The SWPPP will include final operating drainage design and specify BMP's and monitoring requirements for the SJVEC project facilities. This includes final site drainage plans and locations of physical BMP's facilities/devices.

**Verification:** At least 60 days prior to the start of project operation, the project owner shall submit a copy of the SWPPP for Industrial Activities to the CPM for review and approval and to the Central Valley Regional Water Quality Control Board for review and comment. Approval of the SWPPP by the CPM must be received prior to initiation of project operation.

**SOIL & WATER 4:** Prior to the start of project operation, the project owner shall obtain sanitary wastewater disposal service from the City of San Joaquin.

**Verification:** At least 60 days prior to the start of project operation, the project owner shall submit evidence to the CPM that it has obtained sanitary wastewater disposal service from City of San Joaquin.

**SOIL & WATER 5:** Prior to project operation, the project owner shall secure a User Agreement for Reclaimed Water for its process and cooling water supply from the Fresno-Clovis Wastewater Treatment Facility. The project owner shall only use reclaimed groundwater supplied from the City of Fresno-Clovis WWTF as its sole source for cooling and process water supply.

**Verification:** At least 60 days prior to the start of project operation, the project owner shall submit evidence to the CPM that it has secured a User Agreement for Reclaimed Water for its process and cooling water supply from the Fresno-Clovis Wastewater Treatment Facility.

**SOIL & WATER 6:** The project owner will install metering devices and record on a monthly basis the total amount of recycled water used by the project. The project owner shall also monitor the water quality of the inflow at the SJVEC monthly. The intent of this monitoring is to make certain the project owner is achieving the objective of using only reclaimed water and that its quality is consistently acceptable for SJVEC use for cooling and process supply. The project owner shall prepare an annual summary, which will include the water quality (constituents to be determined), monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual summary will also include the yearly range and yearly average water use by the project. This information will be supplied to the CPM.

**Verification:** The project owner will submit as part of its annual compliance report a water quality and use summary to the CPM for the life of the project. Any significant changes in the water supply for the project during construction or operation of the plant shall be noticed in writing and provided to the CPM for approval at least 60 days prior to the effective date of the proposed change.

**SOIL & WATER 7:** Prior to project operation, the project owner shall obtain an agreement from the City of Fresno to measure and record groundwater production and water quality for each dedicated reclamation well supplying SJVEC and transmit the data to the project owner. Flow meters with totalizers shall be installed at each well. During project operation, pumping rate and total production shall be recorded monthly. Water quality testing shall comply with the CVRWQCB requirements.

**Verification:** At least 60 days prior to project operation, the project owner shall provide evidence of its ability to obtain groundwater production and water quality data for each of the dedicated reclamation wells supplying SJVEC. The project owner, or by agreement the City of Fresno, shall begin water production and water quality monitoring when the wells are first used to provide project process and cooling water. Monthly water production records and water quality data shall be submitted to the CPM 6 months after the start of operation, and then subsequently on an annual basis for the life of the project.

**SOIL & WATER 8:** Prior to project operation, the project owner shall arrange with the City of Fresno for the drilling, construction, and testing of the six reclamation wells for supply of cooling and process water to SJVEC, and provide the initial results of production and water quality testing. In the event inadequate yield or high quality groundwater is produced from the wells, the City and SJVEC will construct additional reclamation wells to achieve the project objectives of pumping only reclaimed water for power plant cooling.

**Verification:** At least 90 days prior to project operation, the project owner shall submit results of initial production and water quality testing to the CPM for each of the six reclamation wells for supply of cooling and process water to SJVEC. Wells not meeting the project goals will be identified and recommendations for corrective measures will be provided.

# AIR QUALITY

Testimony of William Walters and Lisa Blewitt

## INTRODUCTION

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This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed San Joaquin Valley Energy Center (SJVEC or Applicant), which will be located in the City of San Joaquin, Fresno County.

In carrying out the analysis, the California Energy Commission staff evaluated the following major points:

- whether the SJVEC is likely to conform with applicable Federal, State and San Joaquin Valley Air Pollution Control District air quality laws, ordinances, regulations and standards, as required by Title 20, California Code of Regulations, section 1744 (b);
- whether the SJVEC is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards, as required by Title 20, California Code of Regulations, section 1742 (b); and
- whether the mitigation proposed for the SJVEC is adequate to lessen the potential impacts to a level of insignificance, as required by Title 20, California Code of Regulations, section 1744 (b).

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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### FEDERAL

Under the Federal Clean Air Act, as codified in 40 CFR 52.21, there are two major components of air pollution control requirements for stationary sources, nonattainment New Source Review (NSR) and Prevention of Significant Deterioration (PSD). Nonattainment NSR is a permitting process for evaluation of those pollutants that violate federal ambient air quality standards. Conversely, PSD is a permitting process for evaluation of those pollutants that do not violate federal ambient air quality standards. The NSR analysis has been delegated by the U.S. Environmental Protection Agency (U.S. EPA) to the San Joaquin Valley Air Pollution Control District (SJVAPCD, or District). The U.S. EPA determines the conformance with the PSD regulations. The PSD requirements apply only to those projects (known as major sources) that exceed 250 tons per year for any pollutant, or any new facility or stationary source category that is listed in 40 CFR Part 52.21(b)(1)(i)(a), and that emits 100 tons or more per year of any criteria pollutant. A major modification at an existing major source that results in an emission increase of 100 ton per year for carbon monoxide (CO), 40 tons per year for oxides of nitrogen (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>) or volatile organic compounds (VOC), or 15 tons per year for particulate matter less than 10 microns in diameter (PM<sub>10</sub>) will also be subject to PSD review. The entire program, including both nonattainment NSR and PSD reviews, is referred to as the federal NSR program.

Title V of the federal Clean Air Act requires states to implement and administer an operating permit program to ensure that large sources operate in compliance with the requirements included in 40 CFR Part 70. A Title V permit contains all of the requirements specified in different air quality regulations that affect an individual project. As a new major source, the SJVEC will require a Title V permit.

The SJVEC is also subject to the federal New Source Performance Standards (NSPS) for the combustion turbines (40 CFR 60 Subpart GG). This regulation has pollutant emission requirements that are less stringent than those that will be required by NSR requirements for best available control technology (BACT).

The U.S. EPA reviews and approves the SJVAPCD (District) regulations and has delegated to the SJVAPCD the implementation of the federal NSR, Title V, and NSPS programs. The District implements these programs through its own rules and regulations, which are, at a minimum, as stringent as the federal regulations. The U.S. EPA will complete the PSD permit. The Title V program, however, is administered by the District under Rule 2520. In addition, the U.S. EPA has also delegated to the District the authority to implement the federal Clean Air Act Title IV “acid rain” program. The Title IV regulation requirements will include obtaining a Title IV permit prior to operation, the installation of continuous emission monitors to monitor acid deposition precursor pollutants, and obtaining Title IV allowances for emissions of SO<sub>x</sub>. Rule 2540 implements the federal Title IV program. Therefore, compliance with the District’s rules and regulations should result in compliance with federal Title IV and Title V requirements.

## **STATE**

The California State Health and Safety Code, Section 41700, requires that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.”

## **LOCAL**

The proposed project is subject to the following San Joaquin Valley Air Pollution Control District (District) Rules and Regulations:

### **Rule 1080 – Stack Monitoring**

This rule grants the Air Pollution Control Officer the authority to request the installation and use of continuous emissions monitors (CEM’s), and specifies performance standards for the equipment and administrative requirements for record keeping, reporting, and notification.

### **Rule 1081 – Source Sampling**

This rule requires adequate and safe facilities for use in sampling to determine compliance with emission limits, and specifies methods and procedures for source testing and sample collection.

## **Rule 1100 – Equipment Breakdown**

This rule defines a breakdown condition, the procedures to follow if one occurs, and the requirements for corrective action, issuance of an emergency variance, and reporting. This rule is applied to the owner of any source operation with air pollution control equipment, or related operating equipment that controls air emissions, or continuous monitoring equipment.

## **Rule 2010 – Permits Required**

This rule requires any person who is building, altering, replacing or operating any source that emits, may emit air contaminants, or may reduce emissions, to first obtain authorization from the District in the form of an Authority to Construct or a Permit to Operate. By the submission of an ATC application, SJVEC LLC is complying with the requirements of the rule.

## **Rule 2201 – New and Modified Stationary Source Review Rule**

The main function of the District's New Source Review Rule is to allow for the issuance of Authorities to Construct, Permits to Operate, the application of Best Available Control Technology (BACT) to new or modified permit source and to require the new permit source to secure emission offsets.

### **Section 4.1 – Best Available Control Technology**

Best Available Control Technology is defined as: a) the mandatory performance levels that are contained in any State Implementation Plan and that have been approved by EPA; b) the most stringent emission limitation or control technique that has been achieved in practice for a class of source; or c) any other emission limitation or control technique that the District's Air Pollution Control Officer (APCO) finds is technologically feasible and is cost effective. BACT is required for NO<sub>x</sub>, VOC, PM<sub>10</sub> and SO<sub>2</sub> emissions from any new or modified emission unit that results in an emissions increase of 2 lb/day, and CO emissions that exceed 550 lb/day. In the case of SJVEC, BACT applies for NO<sub>x</sub>, VOC, CO, SO<sub>2</sub>, and PM<sub>10</sub> emissions from all point sources of the project.

### **Section 4.5 – Offsets**

Emissions offsets for new or modified sources are required when those sources exceed the following emission levels:

- Oxides of Nitrogen, NO<sub>x</sub> – 10 tons/year
- Volatile Organic Compounds, VOC – 10 tons/year
- Carbon Monoxide, CO – 550 lbs/day
- PM<sub>10</sub> – 80 lbs/day
- Sulfur Oxides, SO<sub>x</sub> – 150 lbs/day

If constructed, the SJVEC would exceed all of the above emission levels, except SO<sub>x</sub>; therefore, the District will require offsets for NO<sub>x</sub>, VOC, CO and PM<sub>10</sub>. The emission offsets provided shall be adjusted according to the distance of the offset from the project proposed site. The ratios are:

- Internal or on-site source – 1 to 1

- Within 15 miles of the same source – 1.2 to 1
- 15 miles or more from the source – 1.5 to 1

### **Section 4.13 - Additional Offset Requirements**

Section 4.13.1 specifies that major sources (defined as those sources that emit greater than 25 tons of NO<sub>x</sub> and VOC and 70 tons of PM<sub>10</sub>) that are shutdown and thus generate an Emission Reduction Credit may not be used as an offset for new major source (like SJVEC) unless those ERCs are included in an EPA-approved attainment plan.

Section 4.13.3 allows for the use of interpollutant offsets (including PM<sub>10</sub> precursors for PM<sub>10</sub>) on a case-by-case basis, provided that the Applicant demonstrates that the emissions increase will not cause a violation of any ambient air quality standard. The ratio for interpollutant trading shall be based on an air quality analysis and shall be equal to or greater than the minimum offsetting requirement (the distance ratios) of this rule.

### **Section 4.14 – Additional Source Requirements**

Section 4.14.2 requires that a new source not cause, or make worse, the violation of an ambient air quality standard as demonstrated through analysis with air dispersion models.

Section 4.14.3 requires that the Applicant of a proposed new major source demonstrate to the satisfaction of the District that all major stationary sources subject to emission limitations that are owned or operated by the Applicant or any entity controlling or under common control with the Applicant in California, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

### **Rule 2520 – Federally Mandated Operating Permits**

Rule 2520 requires that a project owner file a Title V Operating Permit from EPA with the District within 12 months of commencing operation. A project is subject to this requirement if any of the following apply: the project is a major stationary source (under PSD definitions), it has the potential to emit greater than 100 tons per year of a criteria pollutant, any equipment permitted is subject to New Source Performance Standards, the project is subject to Title IV Acid Rain program, or the owner is required to obtain a PSD Permit from EPA. The Title V Permit application requires that the owner submit information on the operation of the air polluting equipment, the emission controls, the quantities of emissions, the monitoring of the equipment as well as other information requirements.

### **Rule 2540 – Acid Rain Program**

A project greater than 25 megawatts (MW) and installed after November 15, 1990, must submit an acid rain program permit application to the District. The acid rain

requirements will become part of the Title V Operating Permit (Rule 2520). The specific requirements for the SJVEC project will be discussed in the “Compliance with LORS – Local” later in this analysis.

### **Rule 4001 – New Source Performance Standards**

Rule 4001 specifies that a project must meet the requirements of the Federal New Source Performance Standards (NSPS), according to Title 40, Code of Federal Regulations, Part 60, Chapter 1. Subpart GG, which pertains to Stationary Gas Turbines, requires that a project meet specific NO<sub>x</sub> concentration limits, based on the heat rate of combustion. In addition, the SO<sub>2</sub> concentration shall be less than 150 parts per million by volume (ppmv) and the sulfur content of the fuel shall be no greater than 0.8 percent by weight.

### **Rule 4101 – Visible Emissions**

Prohibits visible air emissions, other than water vapor, of more than No. 1 on the Ringelmann chart (20 percent opacity) for more than 3 minutes in any 1-hour.

### **Rule 4102 – Nuisance**

Prohibits any emissions “which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or public or which cause or have a natural tendency to cause injury or damage to business or property.”

### **Rule 4201 – Particulate Matter Concentration**

Limits particulates emissions from any source that emits or may emit dust, fumes, or total suspended particulate matter to less than 0.1 grain per dry standard cubic foot (gr/dscf) of gas calculated to 12 percent of carbon dioxide.

### **Rule 4202 – Particulate Matter Emission Rate**

This rule limits particulate matter emissions for any source operation, which emits or may emit particulate matter emissions, by establishing allowable emission rates. Calculation methods for determining the emission rate based on process weight are specified.

### **Rule 4301 – Fuel Burning Equipment**

Limits air contaminant emissions from fuel burning equipment used for the primary purpose of producing heat or power by indirect heat transfer to 0.1 gr/dscf of gas calculated to 12 percent of carbon dioxide, 200 lb/hr of SO<sub>2</sub>, 140 lb/hr of NO<sub>x</sub>, and 10 lb/hr of combustion contaminants, which are defined as particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state.

### **Rule 4305 – Boilers, Steam Generators and Process Heaters**

Limits NO<sub>x</sub> and CO concentrations to no greater than 30 parts per million by volume dry (ppmvd) or (0.036 pounds-per-million British thermal units, lb/MMBtu) and 400 ppm, respectively.

### **Rule 4351 – Boilers, Steam Generators, and Process Heaters – Reasonably Available Control Technology**

This rule limits emissions of oxides of nitrogen (NO<sub>x</sub>) from boilers, steam generators, and process heaters with rated heat inputs greater than 5 million Btu per hour that are fired with gaseous and/or liquid fuels, and are included as a major NO<sub>x</sub> source, to levels consistent with reasonably available control technology (RACT). This rule limits the NO<sub>x</sub> emission and CO emissions to 90 ppm and 400 ppm at 3 percent O<sub>2</sub>, respectively, when firing gaseous fuels. The SJVEC duct burners and auxiliary boiler are subject to this rule.

### **Rule 4701 – Stationary Internal Combustion Engines**

Limits NO<sub>x</sub>, CO and VOC emissions from internal combustion engines rated greater than 50 bph that require a Permit to Operate. Since the emergency generator and fire water pump proposed for this project will be limited to 200 hours per year of non-emergency operation, they are exempt from this rule.

### **Rule 4703 – Stationary Gas Turbines**

Establishes requirements for monitoring and record keeping for NO<sub>x</sub> and CO emissions from new or modified stationary gas turbines with a designed power of 0.3 MW or higher. According to this rule, at 15 percent O<sub>2</sub>, NO<sub>x</sub> and CO concentrations must be less than 9 ppm and 200 ppm, respectively.

### **Rule 4801 – SO<sub>2</sub> Concentration**

Limits the emissions of sulfur compounds to no greater than 0.2 percent by volume calculated as SO<sub>2</sub> on a dry basis.

### **Rule 7012 – Hexavalent Chromium – Cooling Towers**

This rule limits emissions of hexavalent chromium from circulating water in cooling towers and prohibits the use or sale of products containing these compounds for treating cooling tower water. Record keeping and monitoring requirements, test methods for determining emission concentration limits, and an implementation schedule are specified.

### **Rule 8011 – General Requirements**

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. The rule also specifies test methods for determining compliance with visible dust emission (VDE) standards, stabilized surface conditions, soil moisture content, silt content for bulk materials, silt content for unpaved roads and unpaved vehicle/equipment traffic areas, and threshold friction velocity (TFV). Records shall be maintained only for those days that a control measure was implemented, and kept for one year following project completion to demonstrate compliance. A fugitive dust management plan for unpaved roads and unpaved vehicle/equipment traffic areas is discussed as an alternative for Rule 8061 and Rule 8071.

### **Rule 8021 – Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities**

Requires fugitive dust emissions throughout construction activities (from pre-activity to active operations and during periods of inactivity) to comply with the conditions of a

stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, or constructing and maintaining wind barriers. A Dust Control Plan is also required and shall be submitted to the Air Pollution Control Officer (APCO) at least 30 days prior to the start of any construction activities on any site that include 40 acres or more of disturbed surface area, or will include moving more than 2,500 cubic yards per day of bulk materials on at least three days.

### **Rule 8031 – Bulk Materials**

Limits the fugitive dust emissions from the outdoor handling, storage and transport of bulk materials. Requires fugitive dust emissions to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized.

### **Rule 8041 – Carryout and Trackout**

Limits carryout and trackout during construction, demolition, excavation, extraction, and other earthmoving activities (Rule 8021), from bulk materials handling (Rule 8031), and from unpaved vehicle and equipment traffic areas (Rule 8071) where carryout has occurred or may occur. Specifies acceptable (and unacceptable) methods for cleanup of carryout and trackout.

### **Rule 8051 – Open Areas**

Requires fugitive dust emissions from any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused, or vacant for more than seven day to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, paving, applying and maintaining gravel, or planting vegetation.

### **Rule 8061 – Paved and Unpaved Roads**

Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants on unpaved roadways to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include “any unpaved road segment with less than 75 vehicle trips for that day.”

### **Rule 8071 – Unpaved Vehicle/Equipment Traffic Areas**

This rule intends to limit fugitive dust from unpaved vehicle and equipment traffic areas one acre or larger by using gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include “unpaved vehicle and equipment traffic areas on any day which less than 75 vehicle trips occur.”

### **Rule 8081 – Agricultural Sources**

This rule intends to limit fugitive dust from off-field agricultural sources exempted from Rules 8031 (Bulk Materials), 8061 (Paved and Unpaved Roads), and 8071 (Unpaved

Vehicle/Equipment Traffic Areas). Requires fugitive dust emissions to comply with the conditions of a stabilized surface and to not exceed an opacity limit of 20 percent.

## SETTING

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### METEOROLOGICAL CONDITIONS

The climate of the San Joaquin Valley is controlled by a semi-permanent subtropical high-pressure system that is located off the Pacific Ocean. In the summer, this strong high-pressure system results in clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high pressure weakens and moves south, allowing storm systems to move through the area. Temperature, winds, and rainfall are more variable during these months, but also stagnant conditions occur more frequently than during summer months. Weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent fog. The project site receives an average of 7 inches of rain annually.

Temperature, wind speed, and wind direction data have been collected at the Lemoore Naval Air Station (NAS). The predominant wind direction in the project area is from the north through west-northwest. The wind speeds are higher during the spring, summer, and fall.

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds with the mixing layer.

### EXISTING AIR QUALITY

The project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 1**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from 1-hour to annual average. The standards are read as a mass fraction, in parts per million (ppm), or as a concentration, in milligrams or micrograms of pollutant per cubic meter of air ( $\text{mg}/\text{m}^3$  or  $\mu\text{g}/\text{m}^3$ ).

**AIR QUALITY Table 1**  
**Federal and State Ambient Air Quality Standards**

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O <sub>3</sub> )	1 Hour	0.12 ppm (235 µg/m <sup>3</sup> )	0.09 ppm (180 µg/m <sup>3</sup> )
	8 Hour	0.08 ppm (160 µg/m <sup>3</sup> )	—
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )
	1 Hour	35 ppm (40 mg/m <sup>3</sup> )	20 ppm (23 mg/m <sup>3</sup> )
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.053 ppm (100 µg/m <sup>3</sup> )	—
	1 Hour	—	0.25 ppm (470 µg/m <sup>3</sup> )
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	0.03 ppm (80 µg/m <sup>3</sup> )	—
	24 Hour	0.14 ppm (365 µg/m <sup>3</sup> )	0.04 ppm (105 µg/m <sup>3</sup> )
	3 Hour	0.5 ppm (1300 µg/m <sup>3</sup> )	—
	1 Hour	—	0.25 ppm (655 µg/m <sup>3</sup> )
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Geometric Mean	—	30 µg/m <sup>3</sup>
	24 Hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
	Annual Arithmetic Mean	50 µg/m <sup>3</sup>	—
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>a</sup>	Annual Arithmetic Mean	15 µg/m <sup>3</sup>	—
	24 Hour	65 µg/m <sup>3</sup>	—
Sulfates (SO <sub>4</sub> )	24 Hour	—	25 µg/m <sup>3</sup>
Lead	30 Day Average	—	1.5 µg/m <sup>3</sup>
	Calendar Quarter	1.5 µg/m <sup>3</sup>	—
Hydrogen Sulfide (H <sub>2</sub> S)	1 Hour	—	0.03 ppm (42 µg/m <sup>3</sup> )
Vinyl Chloride (chloroethene)	24 Hour	—	0.010 ppm (26 µg/m <sup>3</sup> )
Visibility Reducing Particulates	1 Observation (8 hour)	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Note(s):

- a. The State of California is currently in the process of revising its annual PM<sub>10</sub> ambient air quality standard and in the process of enacting PM<sub>2.5</sub> ambient air quality standards. The standards being proposed as of September 26, 2002 are as follows:

PM<sub>10</sub> – 20 ug/m<sup>3</sup> (annual standard - arithmetic mean)

PM<sub>2.5</sub> – 12 ug/m<sup>3</sup> (annual standard - arithmetic mean)

The U.S. EPA, California Air Resource Board (CARB), and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The SJVEC is located in Fresno County and, as stated above, is under the jurisdiction of the San Joaquin Valley Air Pollution Control District. This area is designated as nonattainment for both the federal and state ozone and PM<sub>10</sub> standards. **AIR QUALITY Table 2** summarizes federal and state attainment status of criteria pollutants for Fresno County.

**AIR QUALITY Table 2**  
**Federal and State Attainment Status for Fresno County**

Pollutant	Attainment Status	
	Federal	State
Ozone – One hour	Severe Nonattainment <sup>a</sup>	Severe Nonattainment
CO	Unclassified/Attainment <sup>b</sup>	Attainment
NO <sub>2</sub>	Unclassified/Attainment <sup>b</sup>	Attainment
SO <sub>2</sub>	Unclassified	Attainment
PM <sub>10</sub>	Serious Nonattainment	Nonattainment
Lead	No Designation	Attainment

Source: 40 CFR 81 and SJVAPCD web site ([www.valleyair.org/aqinfo/attainment.htm](http://www.valleyair.org/aqinfo/attainment.htm))

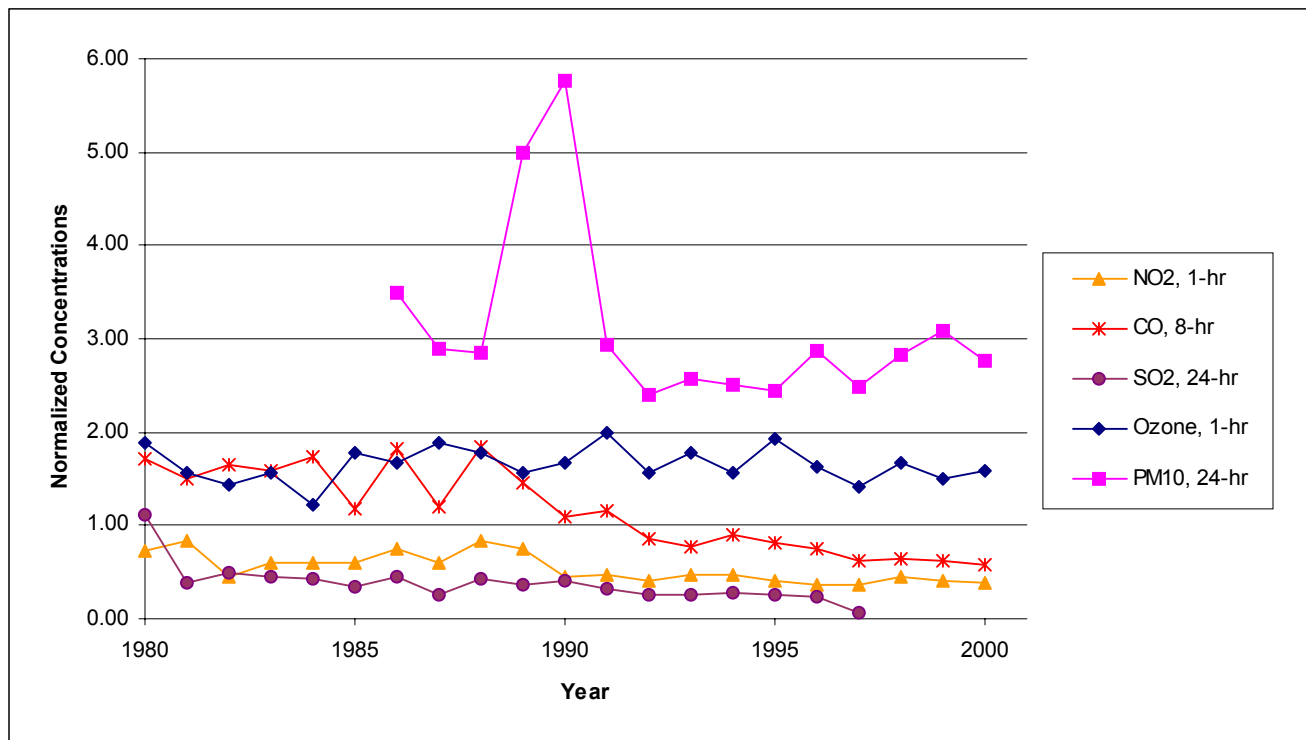
a. Region 9 News Release San Francisco, CA, "U.S. EPA Downgrades San Joaquin Valley Air," October 23, 2001 (Ozone).

b. Unclassified/Attainment – The attainment status for the subject pollutant is classified as either attainment or unclassified.

The project site is in Fresno County, in the southeastern portion of the City of San Joaquin. The monitoring station closest to the proposed project site is the Fresno-Drummond Street Station. There are also several other monitoring stations in Fresno, Hanford and Corcoran that are representative of area-wide ambient conditions. Additional SO<sub>2</sub> data from Bakersfield is required, since the Fresno stations stopped measuring SO<sub>2</sub> concentrations after 1997.

**AIR QUALITY Figure 1** summarizes the historical air quality data for the project location, recorded at the Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000) air monitoring stations for ozone, PM<sub>10</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub> and PM<sub>2.5</sub>. In **AIR QUALITY Figure 1**, the short term normalized concentrations are provided from 1980 to 2000. Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most-stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than one indicate that the measured concentrations were lower than the most-stringent ambient air quality standard.

**AIR QUALITY Figure 1**  
**Normalized Maximum Short-Term Historical Air Pollutant Concentrations**  
**Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000)**



A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 1999 the highest 1-hour average ozone concentration measured in Fresno was 0.135 ppm. Since the most stringent ambient air quality standard is the state standard of 0.09 ppm, the 1999 normalized concentration is  $0.135/0.09 = 1.50$ .  
Source: (CARB 2000).

Following is a more in-depth discussion of ambient air quality conditions in the project area.

## **Ozone**

In the presence of ultraviolet radiation, both NO<sub>x</sub> and VOC go through a number of complex chemical reactions to form ozone. **AIR QUALITY Table 3** summarizes the best representative ambient ozone data collected from three different monitoring stations close to the project site. The table includes the maximum 1-hour and 8-hour ozone levels and the number of days above the State or National standards. Ozone formation is higher in spring and summer and lower in the winter. The San Joaquin Valley air basin is classified as an extreme nonattainment area for ozone because it violates both National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS).

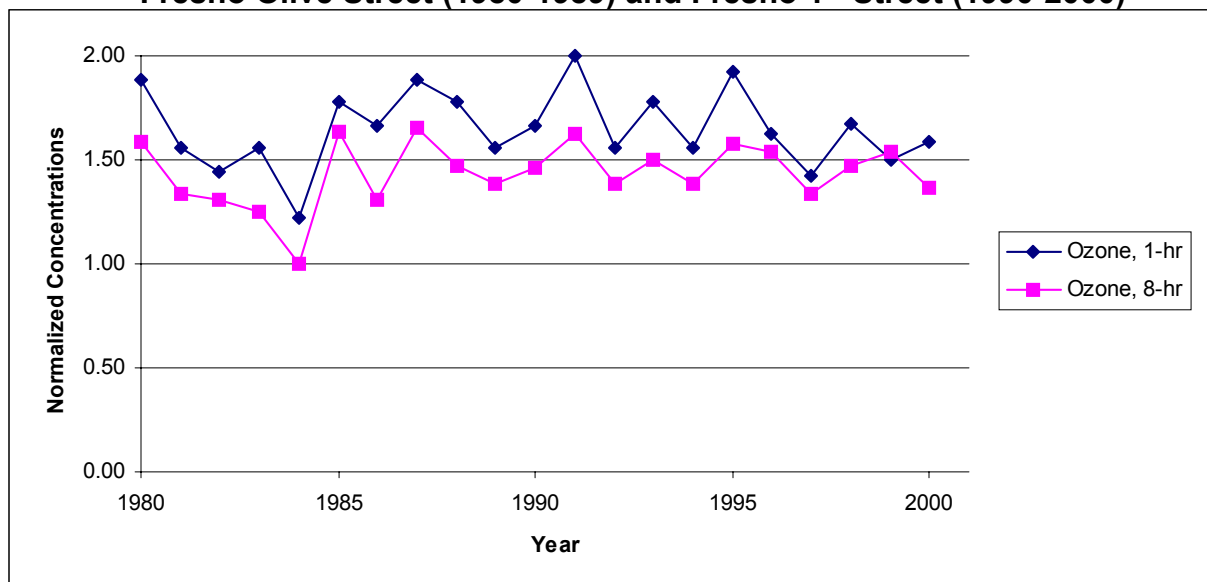
### AIR QUALITY Table 3 Ozone Air Quality Summary, 1991-2000 (ppm)

Year	Fresno 1 <sup>st</sup> Street				Fresno Drummond Street				Hanford S. Irwin Street			
	Days Above CAAQS 1-Hr	Max. 1-Hr Avg.	Days Above NAAQS 8-Hr	Max. 8-Hr Avg.	Days Above CAAQS 1-Hr	Max. 1-Hr Avg.	Days Above NAAQS 8-Hr	Max. 8-Hr Avg.	Days Above CAAQS 1-Hr	Max. 1-Hr Avg.	Days Above NAAQS 8-Hr	Max. 8-Hr Avg.
1991	76	0.180	72	0.130	44	0.150	34	0.118	---	---	---	---
1992	56	0.140	42	0.111	44	0.140	30	0.100	---	---	---	---
1993	59	0.160	54	0.120	27	0.150	17	0.107	---	---	---	---
1994	56	0.140	51	0.111	17	0.114	6	0.092	9	0.119	12	0.102
1995	65	0.173	53	0.126	20	0.120	9	0.097	2	0.096	1	0.085
1996	59	0.146	49	0.123	45	0.154	34	0.122	78	0.144	81	0.121
1997	30	0.128	23	0.107	19	0.131	11	0.099	23	0.126	26	0.106
1998	46	0.151	44	0.118	49	0.148	41	0.115	27	0.143	31	0.113
1999	53	0.135	45	0.123	38	0.132	28	0.108	28	0.140	25	0.111
2000	48	0.143	41	0.109	37	0.131	24	0.104	48	0.124	51	0.110

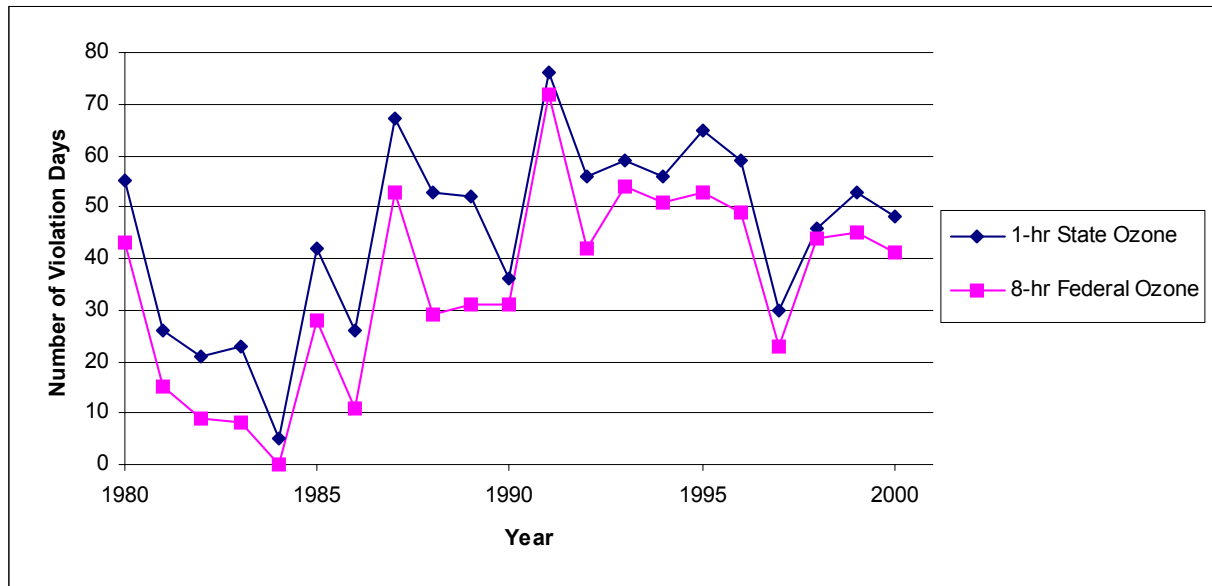
California Ambient Air Quality Standard (CAAQS): 1-Hr, 0.09 ppm  
National Ambient Air Quality Standard (NAAQS): 1-Hr, 0.12 ppm; 8-Hr, 0.08 ppm  
Source: CARB web site, <http://www.arb.ca.gov/adam/>, Accessed November 2001.  
Source: CARB Air Quality Data CD, November 2000 (1980-1999).

The year 1980 to 2000 trends for the maximum 1-hour and 8-hour ozone concentrations, referenced to the most stringent standard, and the number of violations of the California 1-hour standard and the Federal 8-hour standard for the Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000) monitoring stations are shown in **AIR QUALITY Figure 2** and **Figure 3**, respectively.

**AIR QUALITY Figure 2**  
**Normalized Ozone Air Quality Maximum Concentration**  
**Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000)**



**AIR QUALITY Figure 3**  
**Ozone Air Quality Violations**  
**Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000)**



As these two figures show, since the 1-hour ozone concentrations peaked in 1991 there has been an overall gradual downward trend for both maximum ozone concentrations and the number of violations of air quality standards.

### **Inhalable Particulate Matter (PM<sub>10</sub>)**

As **AIR QUALITY Table 4** indicates, the project area annually experiences a number of violations of the state 24-hour PM<sub>10</sub> standard. The federal 24-hour standard, however, is generally met. Annual average PM<sub>10</sub> levels are above the state standard, except for 1998. Annual average PM<sub>10</sub> levels are generally above the federal standard. The San Joaquin Valley air basin is considered to be in nonattainment of both federal and state PM<sub>10</sub> standards.

PM<sub>10</sub> can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO<sub>x</sub>, SO<sub>x</sub> and VOC from turbines, and ammonia from NO<sub>x</sub> control equipment, given the right meteorological conditions, can form particulate matters in the form of nitrates (NO<sub>3</sub>), sulfates (SO<sub>4</sub>), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NO<sub>x</sub> emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM<sub>10</sub>, and should be even a higher contributor to particulate matter of less than 2.5 microns (PM<sub>2.5</sub>). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) and some as sodium nitrate. If the ammonium and the sodium ions associated

with the nitrate ion are taken into consideration, PM nitrate contributions to the total PM would even more significant.

The air agencies in California are now deploying PM<sub>2.5</sub> ambient air quality monitors throughout the state. PM<sub>2.5</sub> ambient air quality attainment plans, if needed, are due to the U.S. EPA by 2005.

The highest PM concentrations are measured in the winter. During wintertime high PM episodes, the contribution of ground level releases to ambient PM concentrations is disproportionately high. The contribution of wood-smoke particles to the PM<sub>2.5</sub> concentrations may be even higher, considering that most of the wood-smoke particles are smaller than 2.5 microns.

**AIR QUALITY Table 4**  
**PM<sub>10</sub> Air Quality Summary, 1991-2000 (µg/m<sup>3</sup>)**

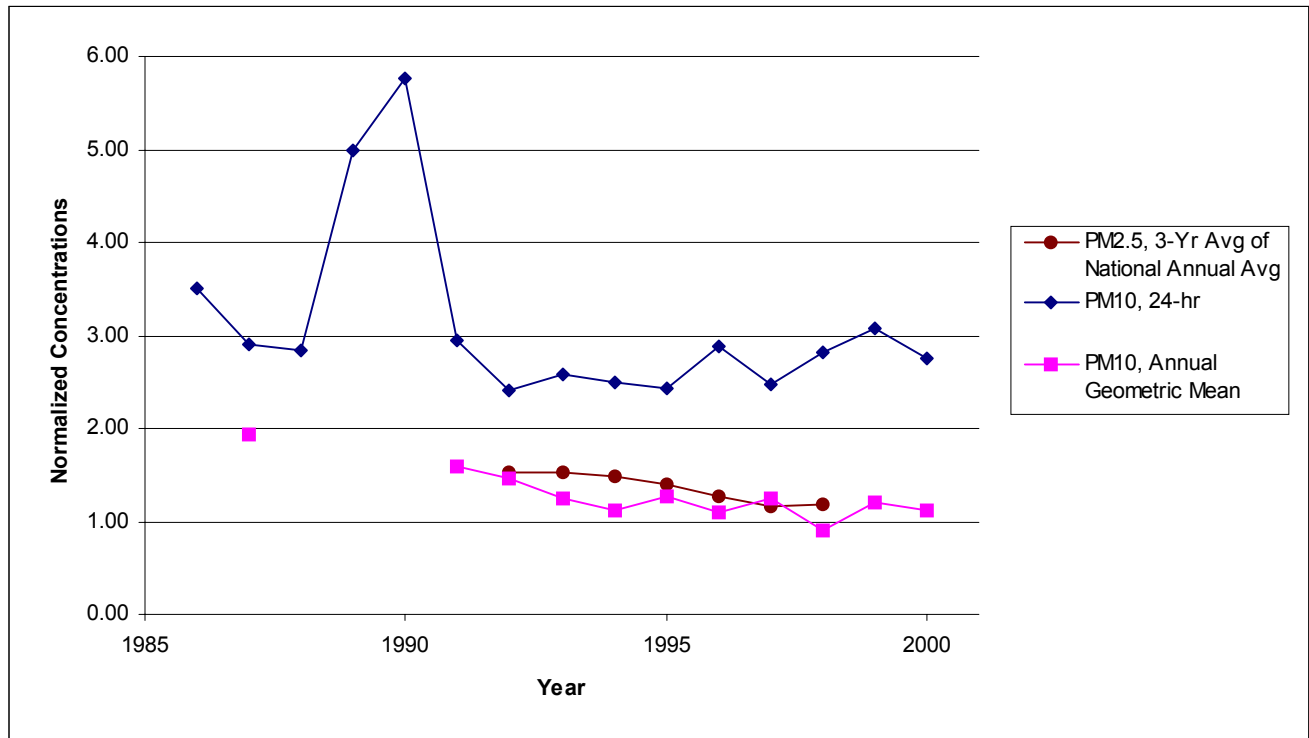
Year	Fresno 1 <sup>st</sup> Street				Fresno Drummond Street				Hanford S. Irwin Street			
	Days * Above CAAQS	Max. Daily Avg.	Annual Geo. Mean	Annual Arith. Mean	Days * Above CAAQS	Max. Daily Avg.	Annual Geo. Mean	Annual Arith. Mean	Days * Above CAAQS	Max. Daily Avg.	Annual Geo. Mean	Annual Arith. Mean
1991	174	147	47.7	60.0	174	152	52.1	66.1	---	---	---	---
1992	114	120	44.0	48.8	162	116	47.5	52.1	---	---	---	---
1993	132	129	37.5	46.7	150	152	44.3	53.0	36	192	69.8	---
1994	48	125	33.8	39.0	150	127	43.2	49.7	156	116	44.3	50.1
1995	136	122	37.9	44.5	138	126	40.0	48.8	150	185	43.6	52.9
1996	57	144	33.0	37.0	84	121	33.8	39.3	105	120	34.7	40.8
1997	72	124	37.1	42.6	108	121	41.5	46.7	102	143	41.3	46.2
1998	60	141	27.1	33.7	84	132	31.2	39.3	90	146	29.8	39.2
1999	114	154	35.8	44.6	108	162	42.1	53.1	102	143	41.6	53.4
2000	66	138	33.5	40.3	114	130	39.6	42.7	102	119	41.9	49.0
California Ambient Air Quality Standard: 24-Hr, 50 µg/m <sup>3</sup> ; Annual Geometric, 30 µg/m <sup>3</sup> National Ambient Air Quality Standard: 24-Hr, 150 µg/m <sup>3</sup> ; Annual Arithmetic, 50 µg/m <sup>3</sup> Source: CARB web site, <a href="http://www.arb.ca.gov/adam/">http://www.arb.ca.gov/adam/</a> , Accessed November 2001. Source: CARB Air Quality Data CD, November 2000 (1980-1999).												
* Days above the state standard (calculated): Because PM <sub>10</sub> is monitored approximately once every six days, the potential number of violation days is calculated by multiplying the actual number of days of violations by six.												

The year 1986 to 2000 trends for the maximum 24-hour PM<sub>10</sub>, Annual Geometric Mean PM<sub>10</sub> and 3-Year Average of Annual Arithmetic Mean PM<sub>2.5</sub> concentrations, referenced to the most stringent standard, and the number of violations of the California 24-hour PM<sub>10</sub> standard for the Fresno Olive Street (1986-1989) and Fresno 1<sup>st</sup> Street (1990-2000) monitoring stations are shown in **Air Quality Figure 4** and **Figure 5**, respectively.

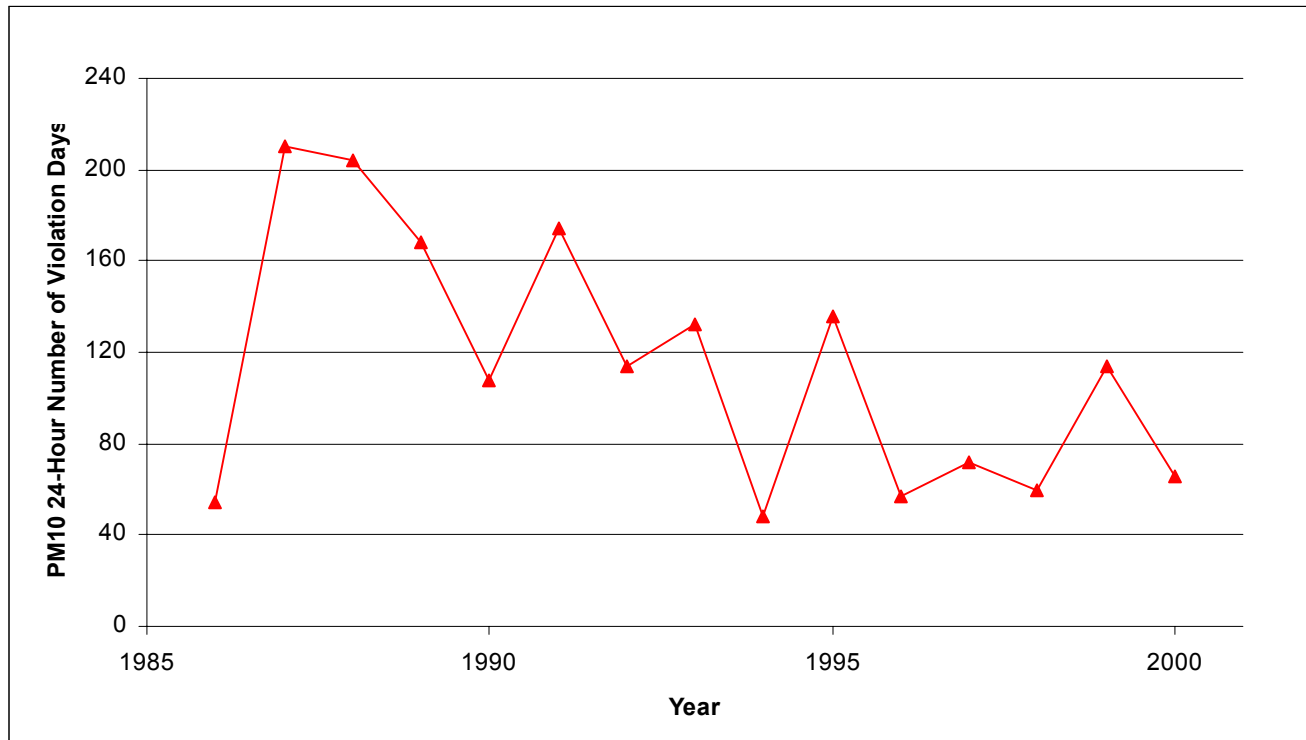
As the two figures show, there is an overall gradual downward trend for both maximum 24-Hour PM<sub>10</sub> concentrations and Annual Geometric Mean PM<sub>10</sub> concentrations.

As these two figures show there is an overall gradual downward trend for Annual Geometric Mean PM<sub>10</sub> concentrations, maximum 24-Hour PM<sub>10</sub> concentrations and number of violations of the California 24-Hour Standard.

**AIR QUALITY Figure 4**  
**Normalized PM<sub>10</sub> and PM<sub>2.5</sub> Air Quality Maximum Concentrations**  
**Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000)**



**AIR QUALITY Figure 5**  
**PM<sub>10</sub> 24-Hour Air Quality Violations**  
**Fresno Olive Street (1980-1989) and Fresno 1<sup>st</sup> Street (1990-2000)**



### **Inhalable Particulate Matter (PM<sub>2.5</sub>)**

As **AIR QUALITY Table 5** indicates, the 98<sup>th</sup> percentile 24-hour average PM<sub>2.5</sub> concentration levels have been declining and are below the proposed NAAQS of 65 µg/m<sup>3</sup>. The 3-year average of annual arithmetic means (national annual average) continues to decline through the 1990s, but remains higher than the proposed NAAQS of 15 µg/m<sup>3</sup> as shown in **AIR QUALITY Figure 4**. Attainment for PM<sub>2.5</sub> will be based on the entire air basin. If attainment classification were to take effect now using current ambient air quality data, the SJVAB would be found to be in non-attainment.

**AIR QUALITY Table 5**  
**PM<sub>2.5</sub> Air Quality Summary, 1991-1998 (µg/m<sup>3</sup>)<sup>a</sup>**

Year	Fresno 1 <sup>st</sup> Street					Corcoran Van Dorsten Avenue (V) and Patterson Avenue (P)					
	Max. Daily Avg.	98 <sup>th</sup> Percentile of Max. Daily Avg.	3-Yr. Avg. 98 <sup>th</sup> Percentile of Max. Daily Avg.	National Annual Avg.	3-Yr. Avg. of National Annual Avg.	V or P	Max. Daily Avg.	98 <sup>th</sup> Percentile of Max. Daily Avg.	3-Yr. Avg. 98 <sup>th</sup> Percentile of Max. Daily Avg.	National Annual Avg.	3-Yr. Avg. of National Annual Avg.
1991	92	91.9	---	25.9	---	V	111	111.1	107	21.3	18.1
1992	71	68.0	79	21.6	23.0	V	81	81.0	102	22.8	22.2
1993	92	74.0	78	21.5	23.0	V	72	64.0	85	17.8	20.6
1994	80	68.0	70	23.2	22.1	V	77	69.0	71	18.4	19.7
1995	65	61.0	68	18.0	20.9	V	53	49.0	61	19.3	18.5
1996	56	41.0	57	15.9	19.0	V	63	37.0	52	13.0	16.9
						P	22	22.0	---	---	---
1997	105	65.0	56	18.7	17.5	V	63	38.0	41	14.5	15.6
						P	60	38.0	---	13.7	---
1998	88	52.0	53	19.2	17.9	V	24	24.0	33.0	10.0	12.5
						P	87	55.0	38.3	14.0	---
National Ambient Air Quality Standard: 3-Year Average - 98 <sup>th</sup> Percentile of 24-Hr Avg. Concentrations, 65 µg/m <sup>3</sup> ; 3-Year Average of Annual Arithmetic Mean (National Annual Average), 15 µg/m <sup>3</sup> Source: CARB web site, <a href="http://www.arb.ca.gov/adam/">http://www.arb.ca.gov/adam/</a> , Accessed November 2001. Note(s): a. Incomplete data is available for 1999. No data is available for 2000.											

## **Carbon Monoxide (CO)**

As **AIR QUALITY Table 6** shows, the maximum one-hour and eight-hour CO concentrations in the Fresno area are less than the California Ambient Air Quality Standards. CO is considered a local pollutant as it is found in high concentrations only near the source of emission. Automobiles and other mobile sources are the principal source of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. According to the data recorded at various Fresno air monitoring stations, there have been no violations of California Ambient Air Quality Standards or National Ambient Air Quality Standards since 1991 (one day the entire year) for the one-hour and the eight-hour CO standards (see **AIR QUALITY Table 6**).

The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since mobile sources (motor vehicles) are the main cause of CO, ambient concentrations of CO are highly dependent on motor vehicle activity. In fact, the peak CO concentrations occur during the rush hour traffic in the morning and afternoon. Carbon monoxide concentrations in Fresno County and the rest of the state have declined significantly due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phases I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also

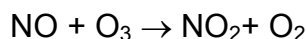
contributed to the decline in CO levels in the state. Today, all the areas of California, with the sole exception of certain locations within Los Angeles County, are in compliance with the CO ambient air quality standards.

**AIR QUALITY Table 6**  
**CO Air Quality Summary, 1991-2000 (ppm)**

Year	Fresno 1 <sup>st</sup> Street		Fresno Drummond Street		Fresno Sierra Skypark #2	
	Maximum 1-Hr Average	Maximum 8-Hr Average	Maximum 1-Hr Average	Maximum 8-Hr Average	Maximum 1-Hr Average	Maximum 8-Hr Average
1991	15.0	10.38	10.0	7.88	7.0	3.43
1992	13.0	7.63	9.0	7.00	5.0	3.14
1993	11.0	6.88	8.0	5.25	5.0	2.71
1994	11.9	8.10	9.6	6.04	4.9	3.23
1995	10.3	7.28	6.4	4.80	3.8	2.49
1996	10.0	6.83	6.0	4.40	4.3	3.72
1997	8.7	5.69	6.3	4.10	4.1	2.83
1998	9.0	5.88	6.6	4.44	3.8	2.61
1999	8.7	5.53	11.9	4.89	3.5	2.29
2000	---	5.24	---	3.53	---	2.19
California Ambient Air Quality Standard: 1-Hr, 20 ppm; 8-Hr, 9 ppm National Ambient Air Quality Standard: 1-Hr, 35 ppm; 8-Hr, 9 ppm Source: CARB web site, <a href="http://www.arb.ca.gov/adam/">http://www.arb.ca.gov/adam/</a> , Accessed November 2001. Source: CARB Air Quality Data CD, November 2000 (1980-1999).						

## **Nitrogen Dioxide (NO<sub>2</sub>)**

As shown in **AIR QUALITY Table 7** the maximum one-hour and annual concentrations of NO<sub>2</sub> at the Fresno and Kings County air monitoring stations are lower than California Ambient Air Quality Standards. Approximately 90 percent of the NO<sub>x</sub> emitted from combustion sources is NO, while the balance is NO<sub>2</sub>. NO is oxidized in the atmosphere to NO<sub>2</sub> but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO<sub>2</sub> occur during the fall and not in the winter when atmospheric conditions favor the trapping of ground level releases but lack significant photochemical activity (less sunlight). In the summer the conversion rates of NO to NO<sub>2</sub> are high but the relatively high temperatures and windy conditions (atmospheric unstable conditions) disperse pollutants, preventing the accumulation of NO<sub>2</sub> to levels approaching the 1-hour ambient air quality standard. The formation of NO<sub>2</sub> in the summer with the help of the ozone is according to the following reaction.



In urban areas, ozone concentration levels are typically high. These levels will drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NO<sub>x</sub> emissions) ozone concentrations can remain relatively high.

**AIR QUALITY Table 7**  
**NO<sub>2</sub> Air Quality Summary, 1991-2000 (ppm)**

Year	Fresno 1 <sup>st</sup> Street		Fresno Drummond Street		Hanford S. Irwin Street	
	Maximum 1-Hr Average	Maximum Annual Average	Maximum 1-Hr Average	Maximum Annual Average	Maximum 1-Hr Average	Maximum Annual Average
1991	0.120	0.023	0.110	0.025	---	---
1992	0.100	0.020	0.100	0.023	---	---
1993	0.120	0.023	0.120	0.023	---	---
1994	0.119	0.022	0.099	0.023	0.082	0.015
1995	0.104	0.023	0.087	0.021	0.094	0.015
1996	0.093	0.021	0.109	0.021	0.066	0.014
1997	0.092	0.021	0.083	0.020	0.080	0.014
1998	0.112	0.020	0.088	0.020	0.086	0.014
1999	0.103	0.023	0.108	0.024	0.086	0.016
2000	0.094	0.021	0.083	0.020	0.072	0.014
California 1-Hr Ambient Air Quality Standard: 0.25 ppm National Annual Ambient Air Quality Standard: 0.053 ppm Source: CARB web site, <a href="http://www.arb.ca.gov/adam/">http://www.arb.ca.gov/adam/</a> , Accessed November 2001. Source: CARB Air Quality Data CD, November 2000 (1980-1999).						

## **Sulfur Dioxide (SO<sub>2</sub>)**

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO<sub>2</sub> emissions when combusted. By contrast fuels high in sulfur content such as lignite (a type of coal) emit very large amounts of SO<sub>2</sub> when combusted.

Sources of SO<sub>2</sub> emissions within the San Joaquin Valley air basin (SJVAB) come from every economic sector and include a wide variety of fuels; gaseous, liquid and solid. The San Joaquin Valley air basin is designated attainment for all the SO<sub>2</sub> state and federal ambient air quality standards. **AIR QUALITY Table 8** shows the historic 1-hour, 24-hour and annual average SO<sub>2</sub> concentrations collected from three different monitoring stations close to the project site. As **AIR QUALITY Table 8** shows, concentrations of SO<sub>2</sub> are far below the state and federal SO<sub>2</sub> ambient air quality standards.

## **Visibility**

The conditions of visibility in the region of the project site are dependent upon the relative humidity natural to the area and the intensity of both particulate and gaseous pollution in the atmosphere. The most straightforward characterization of visibility is probably the visual range (the greatest distance that a large dark object can be seen). However, in order to characterize visibility over a range of distances, it is more common to analyze the changes in visibility in terms of the change in light-extinction that occurs over each additional kilometer of distance (1/km). In the case of a greater light-extinction, the visual range will decrease.

**AIR QUALITY Table 8**

### SO<sub>2</sub> Air Quality Summary, 1991-2000 (ppm)

Year	Fresno 1 <sup>st</sup> Street			Bakersfield 5558 California Avenue		
	Maximum 1-Hr Avg.	Maximum 24-Hr Avg.	Annual Average	Maximum 1-Hr Avg.	Maximum 24-Hr Avg.	Annual Average
1991	0.030	0.0130	0.0036	---	---	---
1992	0.030	0.0100	0.0021	---	---	---
1993	0.010	0.0100	0.0024	---	---	---
1994	0.017	0.0115	0.0039	0.020	0.0067	0.0027
1995	0.014	0.0105	0.0037	0.026	0.0149	0.0028
1996	0.015	0.0095	0.0021	0.059	0.0105	0.0022
1997	0.010	0.0026	0.0004	0.011	0.004	0.0020
1998	---	---	---	---	---	---
1999	---	---	---	0.011	0.0063	0.0032
2000	---	---	---	---	0.003	0.003
California Ambient Air Quality Standard: 1-Hr, 0.25 ppm; 24-Hr, 0.04 ppm National Ambient Air Quality Standard: 3-Hr, 0.5 ppm; 24-Hr, 0.14 ppm; Annual, 0.030 ppm Source: CARB web site, <a href="http://www.arb.ca.gov/adam/">http://www.arb.ca.gov/adam/</a> , Accessed November 2001. Source: CARB Air Quality Data CD, November 2000 (1980-1999).						

The San Joaquin Valley Air Basin is currently designated as unclassified for visibility reducing particles.

### **Summary**

In summary, staff recommends the background ambient air concentrations in **AIR QUALITY Table 9** for the modeling and impacts analysis. The maximum criteria pollutant concentration from the past three years (1998-2000) from the following representative monitoring stations are used to determine the background value: Fresno - 1<sup>st</sup> Street, Fresno - Drummond Street, Fresno - Sierra Skypark #2, Hanford - S. Irwin Street, Corcoran - Van Dorsten Avenue, Corcoran - Patterson Avenue, and Bakersfield - 5558 California Avenue.

The project site is located at the southern edge of the town of San Joaquin in a predominately rural area between the I-5 freeway and Hwy 99. Where possible the recommended background concentrations come from nearby monitoring stations with similar characteristics. Monitoring stations located within larger urban areas were not considered representative of this site. The recommended ozone, NO<sub>2</sub>, and PM<sub>10</sub> background concentrations are from the Hanford S. Irwin Street monitoring station. The recommended CO background concentrations are from the Fresno Sierra Skypark #2 monitoring station. The recommended SO<sub>2</sub> background concentration is from the Bakersfield monitoring site, which is the only monitoring site within the SJVAB to have monitoring data within the last three years.

**AIR QUALITY Table 9**  
**Staff Recommended Background Concentrations for SJVEC (ppm)**

Pollutant	Averaging Time	1998	1999	2000	Most Restrictive Ambient Air Quality Standard
Ozone	1 hour	0.143	0.140	0.124	0.09
	8 hour	0.113	0.111	0.110	0.08
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hours	<b>146</b>	143	119	50
	Annual Geometric Mean	29.8	41.6	<b>41.9</b>	30
	Annual Arithmetic Mean	39.2	53.4	49.0	50
NO <sub>2</sub>	1 hour	0.086	<b>0.086</b>	0.072	0.25
	Annual	0.014	<b>0.016</b>	0.014	0.053
CO	1 hour	<b>3.8</b>	3.5	---	20
	8 hour	<b>2.61</b>	2.29	2.19	9
SO <sub>2</sub>	1 hour	---	<b>0.011</b>	---	0.25
	3 hour <sup>b</sup>	---	<b>0.010</b>	---	0.5
	24 hours	---	<b>0.0063</b>	0.003	0.04
	Annual	---	<b>0.0032</b>	0.003	0.03

Note(s):

a. Bold values are the background concentrations used throughout the following air quality analysis.

b. 3-hour SO<sub>2</sub> value assumed to equal 90 percent of 1-hour SO<sub>2</sub> value.

## PROJECT DESCRIPTION AND EMISSIONS

### CONSTRUCTION

The SJVEC would include the following major elements at the project site:

- Three Siemens-Westinghouse 501FD (or equivalent) combustion turbine generators with duct-fired heat recovery steam generators (HRSG) driving one steam turbine generator (STG).
- A 16-cell cooling tower using reclaimed water.
- A 370-horsepower (hp) diesel firewater pump.
- A 1,040-kilowatt (kW) natural gas-fired emergency generator.
- A 230-kilovolt (kV) switchyard.
- A deaerating surface condenser.
- A 125,000 pound-per-hour (lb/hr) forced-draft auxiliary boiler

The SJVEC would also include the following linear ancillary projects off the project site:

- An approximately 1,500 feet long, 230-kV electrical transmission line.
- Rerouting of approximately 2,900 feet of the 70-kV subtransmission line that crosses the project site.
- An approximately 20 mile, 24-inch natural gas supply pipeline.
- A 21 mile, 27 inch reclaimed water supply pipeline.

- A 1 mile long domestic water supply pipeline.
- A 2.5 mile sanitary sewer line.

Construction activities for the SJVEC, both on-site or off-site, would generate air emissions from earth moving activities and construction equipment. On-site construction is expected to last approximately 24 months, with the highest daily dust emissions occurring during the 7<sup>th</sup> month and the highest daily exhaust emissions occurring during the 16<sup>th</sup> month. Off-site construction of the natural gas pipeline and reclaimed water pipeline is expected to last 12 months. Construction of the new 230-kV transmission line interconnect is expected to last one month.

## **Project Site**

The power plant itself would take approximately 24 months to construct. The power plant project construction consists of three major areas of activity: 1) civil/structural construction, 2) mechanical construction, and 3) electrical construction. The largest fugitive dust emissions are generated during the civil/structural activity, where work such as clearing, grading, site preparation, foundations, and backfilling operations occur. These types of activities require the use of large earth moving equipment, which generate considerable combustion emissions themselves, along with creating fugitive dust emissions. The mechanical construction includes the installation of the heavy equipment, such as the combustion and steam turbines, the heat recovery steam generators, pumps and piping. The use of large cranes to install such equipment generates significantly more emissions than other construction equipment onsite. Electrical equipment installation involves such items as transformers, switching gear, instrumentation and wiring. This is a relatively small emissions generating activity compared to early construction activities. SJVEC estimates for the highest emissions during on-site construction, based on the 7<sup>th</sup> and 16<sup>th</sup> months, are shown in **AIR QUALITY Table 10** and **AIR QUALITY Table 11**, respectively; and a revised estimate (SR 2002c) of the highest emissions from on-site construction, based on the 7<sup>th</sup> month of construction, is shown in **AIR QUALITY Table 11a**. Annual on-site construction heavy equipment exhaust and fugitive dust emissions based on the average equipment mix during the 24-month construction period are summarized in **AIR QUALITY Table 12**, with the revised estimate shown and the revised estimates provided in parenthesis for comparison.

**AIR QUALITY Table 10**  
**Maximum Daily Emissions During On-Site Construction**  
**(Month 7; Maximum Dust Emissions), lbs/day**

	NO <sub>x</sub>	CO	VOC	SO <sub>x</sub>	PM <sub>10</sub>
<b>On-Site</b>					
Construction Equipment	154.74	39.49	11.01	4.40	10.02
Fugitive Dust	---	---	---	---	54.86
<b>Off-site</b>					
Worker Travel	59.71	713.83	57.00	0.04	1.21
Truck Deliveries	39.23	24.54	3.52	1.62	2.29
Rail Deliveries	0	0	0	0	0
<b>Total Emissions</b>	<b>253.67</b>	<b>777.87</b>	<b>71.53</b>	<b>6.06</b>	<b>68.37</b>

From Data Response, Set 1A (SJVEC 2002a) Table 8.1D-1R, page 4 and AFC (SJVEC 2001a), page 8.1D-9-18, and Second Round Response tables from Nancy Matthews emailed 3/28/02.

**AIR QUALITY Table 11**  
**Maximum Daily Emissions During On-Site Construction**  
**(Month 16; Maximum Exhaust Emissions), lbs/day**

	NO <sub>x</sub>	CO	VOC	SO <sub>x</sub>	PM <sub>10</sub>
<b>On-Site</b>					
Construction Equipment	201.00	60.62	16.57	5.62	14.99
Fugitive Dust	---	---	---	---	19.46
<b>Off-site</b>					
Worker Travel	59.71	713.83	57.00	0.04	1.21
Truck Deliveries	39.23	24.54	3.52	1.62	2.29
Rail Deliveries	15.82	1.56	0.59	1.01	0.39
<b>Total Emissions</b>	<b>315.76</b>	<b>800.55</b>	<b>77.68</b>	<b>8.29</b>	<b>38.34</b>

From AFC (SJVEC 2001a) Appendix 8.1D, Table 8.1D-2, page 8.1D-3, AFC (SJVEC 2001a), page 8.1D-10 to 18, and Second Round Response tables from Nancy Matthews emailed 3/28/02.

**AIR QUALITY Table 11a**  
**Revised Maximum Daily Emissions During On-Site Construction**  
**(Month 7; Maximum Dust and Exhaust Emissions), lbs/day**

	NO <sub>x</sub>	CO	VOC	SO <sub>x</sub>	PM <sub>10</sub>
<b>On-Site</b>					
Construction Equipment	136.1	64.9	10.7	3.8	6.4
Fugitive Dust	---	---	---	---	27.4
<b>Off-site</b>					
Worker Travel	31.7	379.1	30.3	0.0	0.6
Truck Deliveries	19.6	12.3	1.8	0.8	1.1
Rail Deliveries	15.8	1.6	0.6	1.0	0.4
<b>Total Emissions</b>	<b>203.3</b>	<b>457.9</b>	<b>43.3</b>	<b>5.6</b>	<b>36.0</b>

From SR 2002c, page 3, Table 1, and Attachment 1.

**AIR QUALITY Table 12**  
**Annual Emissions During On-Site Construction, tons/year**

	NO <sub>x</sub>	CO	VOC	SO <sub>x</sub>	PM <sub>10</sub>
<b>On-Site</b>					
Construction Equipment	18.06 (10.4)	6.62 (7.3)	1.70 (1.1)	0.50 (0.3)	1.49 (0.7)
Fugitive Dust	---	---	---	---	5.29 (0.9)
<b>Off-site</b>					
Worker Travel	3.96	47.39	3.78	0.00	0.08
Truck Deliveries	2.18 (2.55)	1.37 (1.60)	0.20 (0.23)	0.09 (0.11)	0.13 (0.15)
Rail Deliveries	0.36	0.04	0.01	0.02	0.01
<b>Total Emissions</b>	<b>24.57 (17.29)</b>	<b>55.41 (56.28)</b>	<b>5.69 (5.12)</b>	<b>0.62 (0.43)</b>	<b>7.00 (1.83)</b>

Note: The values provided in parenthesis are the revised emission estimates.

Original estimates from AFC (SJVEC 2001a) Appendix 8.1D, Table 8.1D-3, page 8.1D-3, and Second Round Response tables from Nancy Matthews emailed 3/28/02.

Revised estimates from SR 2002c, page 3, Table 1, and Attachment 1.

The Applicant's revised emissions estimates do not fully explain the basis for revising the maximum exhaust emissions from month 16 to month 7. Therefore, staff will consider the revised PM<sub>10</sub> emissions, which should occur during the maximum fugitive dust emission month (month 7), in the impact analysis. However, staff does not believe

that the applicant has provided adequate justification for the revision of the gaseous pollutant (NO<sub>x</sub>, CO, VOC, SO<sub>x</sub>) basis used in their revised impact analysis.

### **Linear Facilities**

The planned linear facilities include the natural gas pipeline, reclaimed water supply pipeline and the 230-kV transmission line interconnect. The construction of all linear facilities is not expected to last longer than 12 months.

The natural gas pipeline would connect to the PG&E main pipeline system at a point located west of the project site, approximately 4 miles east on Interstate 5 adjacent to Manning Avenue. The pipeline would run east along Manning Avenue, south on El Dorado Avenue and then east of Springfield Avenue to the project site. Open trench construction would be performed in approximately 500-foot long sections over a short duration to minimize fugitive dust and construction equipment combustion emissions. Either horizontal directional drilling or “jack and bore” would be used for crossing under the California Aqueduct, Beta Main Canal, and the Fresno Slough.

The reclaimed water supply pipeline would draw reclaimed water from under the infiltration ponds of the Fresno-Clovis Wastewater Treatment Facility (WWTF) approximately 20 miles northeast of the project site. The pipeline route starts at North Avenue and an extension of Grantland Avenue, runs west along North Avenue, south along Chateau Fresno Avenue, west along Lincoln Avenue, south along Jameson Avenue, west along Manning Avenue, and south along Placer Avenue to the project site.

The 230-kV transmission line interconnect would be approximately 1,500 feet long and would connect to PG&E’s Panoche-McCall and Panoche-Kearney 230-kV transmission lines, located to the south of the project site. The transmission line interconnection would involve construction of two double-circuit 230-kV lines approximately 1,300 and 1,500 feet long looping the SJVEC switchyard into the 230-kV lines near the Helm Substation. The proposed connection would align in a north/south direction and cross open farmland.

**AIR QUALITY Table 13** shows maximum daily emissions expected from the construction of the natural gas pipeline, reclaimed water supply pipeline and the transmission line interconnect.

**AIR QUALITY Table 13**  
**Maximum Daily Emissions During Pipeline and Transmission Line**  
**Interconnect Construction, lbs/day**

	NO <sub>x</sub>	CO	VOC	SO <sub>x</sub>	PM <sub>10</sub>
<b>Natural Gas Pipeline</b>					
<b>On-Site</b>					
Construction Equipment	44.6	14.3	3.3	1.5	2.2
Fugitive Dust	---	---	---	---	4.2
<b>Off-site</b>					
Truck Deliveries	18.6	11.6	1.7	0.8	1.0
<b>Total Emissions</b>	63.2	25.9	5.0	2.3	7.4
<b>Water Pipeline</b>					
<b>On-Site</b>					
Construction Equipment	49.6	18.1	3.9	1.8	2.5
Fugitive Dust	---	---	---	---	5.4
<b>Off-site</b>					
Truck Deliveries	27.8	17.4	2.5	1.2	1.6
<b>Total Emissions</b>	77.4	35.5	6.4	3.0	9.5
<b>Transmission Line Interconnect</b>					
<b>On-Site</b>					
Construction Equipment	60.9	12.5	3.9	1.8	2.8
Fugitive Dust	---	---	---	---	1.1
<b>Off-site</b>					
Truck Deliveries	46.4	29.0	4.2	1.9	2.6
<b>Total Emissions</b>	107.3	41.5	8.1	3.7	6.5

From AFC (SJVEC 2001a) Appendix 8.1D, Table 8.1D-4, page 8.1D-4.

Total construction emissions are summarized in **AIR QUALITY Table 14**. While the Applicant did provide a revised estimate of daily and annual main site construction emissions, they did not provide a revised emission estimates for the entire construction period.

**AIR QUALITY Table 14**  
**Total Emissions During Construction Period, tons**

	NO <sub>x</sub> <sup>e</sup>	CO <sup>e</sup>	VOC <sup>e</sup>	SO <sub>x</sub> <sup>e</sup>	PM <sub>10</sub> <sup>e</sup>
<b>On-Site</b>					
Construction Equipment <sup>a</sup>	36.12	13.24	3.40	1.00	2.98
Fugitive Dust <sup>b</sup>	---	---	---	---	10.58
<b>Off-site</b>					
Worker Travel, Deliveries <sup>c</sup>	13.02	97.58	7.98	0.24	0.44
<b>Natural Gas Pipeline<sup>d</sup></b>					
<b>On-Site</b>					
Construction Equipment	5.58	1.79	0.42	0.19	0.28
Fugitive Dust	---	---	---	---	0.77
<b>Off-site</b>					
Truck Deliveries	2.32	1.45	0.21	0.10	0.13
<b>Water Pipeline<sup>d</sup></b>					
<b>On-Site</b>					
Construction Equipment	6.20	2.26	0.49	0.22	0.32
Fugitive Dust	---	---	---	---	0.98
<b>Off-site</b>					
Truck Deliveries	3.48	2.18	0.31	0.14	0.20
<b>Transmission Line Interconnect<sup>d</sup></b>					
<b>On-Site</b>					
Construction Equipment	7.61	1.56	0.48	0.22	0.35
Fugitive Dust	---	---	---	---	0.21
<b>Off-site</b>					
Truck Deliveries	5.80	3.63	0.52	0.24	0.33
<b>Total Construction Emissions</b>	<b>80.13</b>	<b>123.69</b>	<b>13.81</b>	<b>2.35</b>	<b>17.57</b>

Notes:

a. Construction equipment emissions based on average number of units operating over a 2-year period.

b. Fugitive dust emissions based on average of daily emissions during Months 7, 9, 15, and 16. Assumed 250 days per year for construction activities and 365 days per year for windblown dust over a 2-year period.

c. Worker Travel based on 158 round trips per day, 70-mile average round trip distance, and 250 days per year over a 2-year period. Truck deliveries based on 2225.50 deliveries per year and 70-mile average round trip distance over a 2-year period. Each rail delivery is based on 4 rail cars per day with an average of 45.8 deliveries per year over a 2-year period.

d. Linear facility construction emissions based on daily emissions assuming 250 days per year for construction activities and 365 days per year for fugitive dust emissions over a 1-year period.

e. The basis for emission factors are provided in the AFC (SJVEC 2001a), Appendix 8.1D, page 8.1D-19.

## OPERATIONAL PHASE

The project is expected to have an overall annual availability of 92 to 98 percent.

### Equipment Description

The equipment for the proposed SJVEC would include the following components:

- Three Siemens-Westinghouse 501FD (or equivalent) combustion turbine generators (CTGs), rated at 180 MW (nominal at site design conditions). Each

CTG would be equipped with dry, low-NO<sub>x</sub> combustors and steam injection power augmentation capability

- Three heat recovery steam generators (HRSG) equipped with duct burners rated at 746 MMBtu/hr (higher heating value, or HHV, each)
- One 570-MW (nominal) condensing steam turbine generator (STG).
- A continuous emission monitoring (CEM) system for NO<sub>x</sub>, CO, and oxygen.
- Deaerating surface condenser.
- A 125,000 pound-per-hour (lb/hr) forced-draft ABCO Industries, Inc. D-Type natural gas-fired auxiliary boiler or equivalent, to provide saturated steam at 400 pounds-per-square inch gauge (psig) as needed for auxiliary purposes, served by a feedwater deaerator and boiler feedwater pump system.
- A 227,163-gpm 16-cell mechanical/induced draft evaporative cooling tower using reclaimed water.
- One 1,100-kW emergency electrical generator powered by a 1,529-horsepower (hp) Cummins Model QSV81G or equivalent lean burn natural gas-fired internal combustion (IC) engine.
- One 370 hp firewater pump powered by a 300 hp Cummins Model 6CTA8.3-FA diesel-fired emergency IC engine.
- An electric motor-driven gas compressor to boost the natural gas pressure at the fence line when the pressure falls below 550 psig.

## **Facility Operation**

Calpine Corporation has proposed to build and operate the San Joaquin Valley Energy Center LLC (SJVEC) located on an 85-acre parcel in an industrial area near the intersection of West Manning Avenue and South Colorado Avenue in the City of San Joaquin in Fresno County, California. The power plant and switchyard site would occupy approximately 25 acres near the southeast corner of the 85-acre parcel. The site is located adjacent and to the west of the intersection of W. Colorado Avenue and Springfield Avenue. The power plant would be accessed via a new road built off Colusa Avenue on the west side of the project site. The new road would be an extension of Cherry Lane.

The SJVEC would use three stationary, natural gas-fired combustion turbines for power production. Each combustion turbine generator (CTG) would generate an average of 180 MW at base load under average ambient conditions. Each CTG would feature dry low-NO<sub>x</sub> combustors for emission control. The CTG exhaust gases would be used to generate steam in three heat recovery steam generators (HRSG). Each HRSG would be equipped with a selective catalytic reduction (SCR) emission control system that uses ammonia vapor in the presence of a catalyst to reduce the NO<sub>x</sub> concentration in the exhaust gases. An oxidation catalytic converter would also be incorporated into the emissions control system to control carbon monoxide (CO) and volatile organic compound (VOC) emissions. Steam from the HRSGs would be routed to a condensing steam turbine generator (STG), which would produce approximately 550 MW when the CTGs are operating at base load at average ambient conditions with maximum duct

firing of the HRSGs. The total net generating capacity of the power plant would be 1,060 MW with an overall annual availability of 92 to 98 percent. For base load under average ambient conditions with no duct firing of the HRSGs or power augmentation, each CTG will generate an average of 180 MW and the steam turbine will produce approximately 292 MW for a total net generating capacity of 821 MW.

Accessories for each CTG include inlet air foggers and filters, double lube oil cooler, compressor wash system, fire detection and protection system, fuel heating system and acoustical enclosures. Major components of each HRSG include a low-pressure (LP) economizer, LP drum, LP evaporator, LP superheater, intermediate-pressure (IP) economizer, IP evaporator, IP superheaters/reheaters, high-pressure (HP) economizers, HP evaporator, HP drum, and HP superheaters. An auxiliary boiler would provide up to 125,000 lb/hr of saturated steam at 400 psig for HRSG HP steam drum warming when the turbines are offline (to reduce startup times), for condenser hotwell warming, steam turbine gland steam sealing, and sparging steam for freeze protection when the plant is offline (SJVEC 2001c, DR #27, page 13). The steam turbine system consists of an STG with reheat, gland steam system, lubricating oil system, hydraulic control system, and steam admission/induction valving. An electric superheater would provide the steam turbine gland steam.

The SJVEC design includes a 16-cell counter-flow mechanical-draft evaporative cooling tower. Reclaimed water for the cooling tower and process makeup water would be provided by Fresno-Clovis WWTF, and will come from six new reclamation wells located at the Fresno WWTP effluent disposal ponds. Cooling tower blowdown would be discharged to a zero-liquid discharge treatment system, where most of the water would be reclaimed for reuse within the plant. Filtered cooling tower blowdown water would be used for service water.

The SJVEC would have three operators per 12-hour rotating shift, plus three relief operators and one chemical technician, seven maintenance technicians, and seven administrative personnel during the standard 8-hour workday. The facility would be operated 7 days a week, 24 hours per day. SJVEC would sell all or part of its generation under contract. Available generation not sold under contract would be available for sale on the spot market. Operation of the SJVEC therefore depends on the quantity of electricity sold through contracts and the ability of SJVEC to sell into the competitive spot market. The project is expected to have an annual plant availability of 92 to 98 percent. However, the exact operational profile of the plant cannot be defined, because the facility will be operated to satisfy demand. The facility could be operated in one or all of the following modes: (1) Base Load – operated at maximum continuous output; (2) Load Following – operated to meet contractual loads and available spot sales; (3) Partial Shutdown – operated with one or two CTG(s)/HRSG(s) shut down; and (4) Full Shutdown due to equipment malfunction, fuel supply interruption, transmission line disconnect, scheduled maintenance, or if the market price of electricity falls below SJVEC incremental cost of generation.

### **Emission Controls**

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would limit the formation of VOC, PM<sub>10</sub>, and SO<sub>2</sub> emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds

including mercaptan, thus resulting in relatively low emissions of the above-mentioned pollutants. There would be no distillate fuel oil firing at SJVEC except in the fire pump engine.

Each CTG would be equipped with a dry low NO<sub>x</sub> combustion system to control NO<sub>x</sub> and VOC concentrations in the exhaust gas. Dry low NO<sub>x</sub> combustors would generate approximately 25 parts per million by volume, dry (ppmvd) NO<sub>x</sub> at 15 percent oxygen (O<sub>2</sub>) and VOCs at or below 2.0 ppmvd at 15 percent O<sub>2</sub>. Post-combustion NO<sub>x</sub> control would be provided using a selective catalytic reduction (SCR) system. The SCR system will use aqueous ammonia to further reduce NO<sub>x</sub> emissions to 2.0 ppmvd at 15 percent O<sub>2</sub> on a one-hour average basis. Ammonia slip would be limited to 10 ppmvd at 15 percent O<sub>2</sub> from the gas turbines/HRSGs. Carbon monoxide (CO) would be controlled at the CTG combustor and by an oxidation catalyst, and would be limited to no greater than 4 ppmvd at 15 percent O<sub>2</sub>. Particulate emissions would be controlled using natural gas as the sole fuel for the CTG.

The auxiliary boiler would be equipped with a low NO<sub>x</sub> combustor, an SCR system, and a CO catalyst to reduce pollutant concentrations in the exhaust gas. NO<sub>x</sub> emissions would be controlled to less than 9 ppmvd at 3 percent O<sub>2</sub>, CO to 50 ppmvd at 3 percent O<sub>2</sub> and VOC to 10 ppmvd at 3 percent O<sub>2</sub>. The ammonia slip would be limited to 10 ppmvd at 3 percent O<sub>2</sub>.

Three 145-foot-tall, 20-foot diameter stacks would release the HRSG exhaust gas into the atmosphere. The auxiliary boiler would exhaust to the atmosphere through a freestanding 120-foot-tall, 3.5-foot diameter steel stack. Continuous emission monitors (CEMs) would be installed on the three HRSG stacks and the auxiliary boiler stack to monitor NO<sub>x</sub>, CO, oxygen, and carbon dioxide concentrations to assure adherence with the proposed emission limits. The CEM system would generate reports of emissions data in accordance with permit requirements and send alarm signals to the plant's control room when the level of emissions approaches or exceeds pre-selected limits.

### **Project Operating Emissions**

Air emissions would be generated from operating the major project components. The emission rates for the combustion gas turbines with no duct firing, the combustion gas turbines with duct firing, the auxiliary boiler and cooling tower emission are provided in **AIR QUALITY Table 15.**

**AIR QUALITY Table 15**  
**Maximum Pollutant Emission Rates, lb/hr**

Pollutant	Each Gas Turbine No Duct Firing <sup>a</sup>	Each Gas Turbine With Duct Firing <sup>b</sup>	Auxiliary Boiler <sup>c</sup>	Cooling Tower <sup>d</sup>	Emergency Generator	Diesel Fire Pump
NO <sub>x</sub>	14.27 <sup>e</sup>	19.01 <sup>e</sup>	1.80	---	2.63	3.89
CO	17.37	23.14	6.20	---	8.43	2.35
VOC	3.48	6.63	0.69	---	1.42	0.48
PM <sub>10</sub>	9.0	11.5	3.30	1.08	0.10	0.17
SO <sub>2</sub>	1.38	1.84	0.11	---	0.01	0.11
NH <sub>3</sub>	26.41	35.19	0.74	---	---	---

From FDOC (SJVAPCD 2002b) pages 15-26.

Note(s):

- Estimated at 32°F and 100 percent load with no duct firing (Table 8.1A-1, revised 3/21/02, Case 4).
- Estimated at 100°F and 100 percent load with duct firing and power augmentation (Table 8.1A-1, revised 3/21/02, Case 1).
- Emission rates shown reflect the highest value at any operating load (Table 8.1A-2).
- Cooling tower operating at maximum output.
- Maximum 1-hour NO<sub>x</sub> emission rate at 2.0 ppm NO<sub>x</sub> @ 15 percent O<sub>2</sub>.

Expected event emission rates during startup and shutdown events are summarized in **AIR QUALITY Table 16**.

**Air Quality Table 16**  
**SJVEC Facility Criteria Pollutant Emission Rates**  
**During Startup and Shutdown, lb/hr**

Pollutant <sup>c</sup>	Turbine <sup>a</sup>	Auxiliary Boiler <sup>b</sup>
NO <sub>x</sub>	80	10
CO (Cold / Hot Start)	(838 / 902)	12.5
VOC	16	---

From Data Adequacy (SJVEC 2001b) Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02 and FDOC (SJVAPCD 2002b) pages 15 and 16.

Note(s):

- Estimated based on vendor data and source test data provided in SJVEC AFC Appendix 8.1A, Tables 8.1A-7a and 8.1A-7b. Estimated time is 3 hours for a cold start and 1 hour for a hot start.
- Calculated at uncontrolled levels of 50 ppmv NO<sub>x</sub> at 3 percent O<sub>2</sub> and 100 ppmv CO at 3 percent O<sub>2</sub>.
- Emission for pollutants not shown here during startups and shutdowns are assumed to be equal to the maximum hourly emissions during baseload facility operation.

**AIR QUALITY Table 17** summarizes the maximum (worst-case) estimated levels of the different criteria pollutants from the turbine, auxiliary boiler, emergency diesel generator, fire pump engine and cooling tower. To assess worst-case hourly emissions, the following assumptions were made:

Maximum Hourly Emissions:

For NO<sub>x</sub>, CO and VOC:

- One turbine is in hot startup mode.
- Maximum NO<sub>x</sub> emission rate for each turbine with duct firing will be 2.0 ppm.
- Two turbines operate at 100 percent load with duct firing.
- Auxiliary boiler operates at full load.
- Fire pump testing (NO<sub>x</sub>) or emergency generator testing (CO and VOC).

For SO<sub>2</sub>, PM<sub>10</sub> and NH<sub>3</sub>:

- Three turbines operate at 100 percent load with duct firing.
- Auxiliary boiler operates at full load.
- Fire pump testing (PM<sub>10</sub> and SO<sub>2</sub>).
- Cooling tower operates at maximum output.

**Air Quality Table 17  
SJVEC Worst-Case Hourly Emissions**

	Maximum Hourly, lb/hr					
	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	PM <sub>10</sub>	NH <sub>3</sub>
<b>Turbine (1) Startup<sup>a</sup></b>	80	NA <sup>a</sup>	902	16	NA <sup>a</sup>	NA <sup>a</sup>
<b>Turbines With Duct Firing</b>	38.02	5.52	46.28	13.26	34.50	105.57
<b>Auxiliary Boiler</b>	1.80	0.11	6.20	0.69	3.30	0.74
<b>Emergency Generator<sup>b</sup></b>	NA <sup>b</sup>	NA <sup>b</sup>	8.43	1.42	NA <sup>b</sup>	---
<b>Fire Pump Engine<sup>b</sup></b>	2.92	0.08	NA <sup>b</sup>	NA <sup>b</sup>	0.13	---
<b>Cooling Tower</b>	0	0	0	0	1.08	---
<b>Total</b>	122.7	5.7	962.9	31.4	39.0	106.3

From Data Adequacy (SJVEC 2001b) Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02, CO Emissions Limits (SR 2002a), and FDOC (SJVAPCD 2002b) pages 16-26.

Note(s):

a. Maximum SO<sub>2</sub>, PM<sub>10</sub>, and NH<sub>3</sub> emissions are shown in the following row based on three turbines operating at full load with duct firing.

b. Only one emergency engine will be tested during any one hour; therefore, the maximum hourly emissions are determined by which emergency engine has the higher emissions per pollutant.

**AIR QUALITY Table 18** summarizes the maximum (worst-case) estimated levels of the different criteria pollutants from the turbine, auxiliary boiler, emergency diesel generator, fire pump engine and cooling tower. To assess worst-case daily emissions, the following assumptions were made:

Maximum Daily Emissions:

For NO<sub>x</sub>, CO and VOC:

- Each turbine operates in startup/shutdown mode for 4 hours (one cold, one hot start).
- Maximum NO<sub>x</sub> emission rate for each turbine with duct firing will be 2.0 ppm.
- Each turbine operates at full load with duct firing for 16 hours.
- Each turbine operates at full load without duct firing for remaining 4 hours.
- Auxiliary boiler operates at full load for 24 hours.
- Either the emergency generator or the fire pump engine is tested (higher value used).

For SO<sub>2</sub>, PM<sub>10</sub> and NH<sub>3</sub>:

- Each turbine operates at full load with duct firing for 24 hours.
- Auxiliary boiler operates for 24 hours.
- Testing of emergency generator (1 hour) and fire pump (0.75 hour).

- Cooling tower operates at maximum output for 24 hours.

**Air Quality Table 18**  
**SJVEC Worst-Case Daily Emissions**

	Maximum Daily, lb/day					
	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	PM <sub>10</sub>	NH <sub>3</sub>
<b>Turbines (3) - Startup/Shutdown<sup>a</sup> One Cold Start/One Hot Start</b>	<b>960</b>	NA <sup>a</sup>	<b>10,248</b>	192	NA <sup>a</sup>	NA <sup>a</sup>
<b>Turbines (3) - No Duct Firing<sup>a</sup> 4 Hours Each</b>	<b>171.2</b>	NA <sup>a</sup>	<b>208.4</b>	41.8	NA <sup>a</sup>	NA <sup>a</sup>
<b>Turbines (3) - With Duct Firing 16 Hours Each<sup>a</sup></b>	912.5	<b>132.3<sup>a</sup></b>	1,110.7	<b>318.3</b>	<b>828<sup>a</sup></b>	<b>2,533.7<sup>a</sup></b>
<b>Auxiliary Boiler</b>	43.3	2.7	148.8	16.6	79.2	17.8
<b>Emergency Generator</b>	2.63	0.01	8.43	1.42	0.10	---
<b>Fire Pump Engine</b>	2.92	0.08	1.76	0.36	0.13	---
<b>Cooling Tower</b>	0	0	0	0	25.9	---
<b>Total</b>	2,092.6	135.1	11,726.1	570.4	933.3	2,551.5

From Data Adequacy (SJVEC 2001b) Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02, CO Emissions Limits (SR 2002a), and FDOC (SJVAPCD 2002a) pages 16-26.

Note(s):

a. Maximum SO<sub>2</sub>, PM<sub>10</sub>, and NH<sub>3</sub> emissions are based on three turbines operating at full load with duct firing for 24 hour/day.

**AIR QUALITY Table 19** summarizes the annual estimated levels of the different criteria pollutants from the turbine, auxiliary boiler, emergency diesel generator, fire pump engine and cooling tower. To assess the annual emissions, the following assumptions were made:

Annual Emissions:

For NO<sub>x</sub>, CO and VOC:

- Each turbine operates in startup or shutdown mode for 416 hours (52 cold, 260 hot starts) per year.
- Average annual NO<sub>x</sub> concentration will be 2.0 ppm.
- Each turbine operates at full load with duct firing for 5,100 hours per year.
- Each turbine operates at full load without duct firing for remaining 3,244 hours.
- Auxiliary boiler operates for 3,000 hours per year.
- Emergency generator operates for 200 hours per year.
- Fire pump engine operates for 100 hours per year.

For SO<sub>2</sub> and PM<sub>10</sub> and NH<sub>3</sub>:

- Each turbine operates at full load with duct firing for 5,100 hours per year.
- Each turbine operates at full load without duct firing for 3,660 hours per year.
- Auxiliary boiler operates for 3,000 hours per year.
- Emergency generator operates for 200 hours per year.
- Fire pump engine operates for 100 hours per year.
- Cooling tower operates at maximum output for 8,760 hours.

**Air Quality Table 19**  
**SJVEC Annual Emissions**

	Maximum Annual, tons/year					
	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	PM <sub>10</sub>	NH <sub>3</sub>
<b>Turbines (3 max) No Duct Firing With Startup<sup>a</sup></b>	119.33	7.58	622.4	26.92	49.41	145.0
<b>Turbines (3 max) With Duct Firing</b>	145.47	14.08	177.0	50.72	87.98	269.2
<b>Auxiliary Boiler<sup>b</sup></b>	2.71	0.17	9.30	1.04	4.95	1.11
<b>Emergency Generator</b>	0.263	0.001	0.843	0.142	0.010	---
<b>Fire Pump Engine</b>	0.195	0.006	0.118	0.024	0.009	---
<b>Cooling Tower</b>	0	0	0	0	4.73	---
<b>Total</b>	268.0	21.8	809.7	78.8	147.1	415.3

From Data Adequacy (SJVEC 2001b) Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02, CO Emissions Limits (SR 2002a), and FDOC (SJVAPCD 2002b) pages 16-26.

a. Maximum SO<sub>2</sub>, PM<sub>10</sub>, and NH<sub>3</sub> emissions are shown in the following row based on three turbines operating at full load with duct firing for 5,100 hour/year.

b. Auxiliary boiler annual emissions do not include startup/shutdown emissions.

## INITIAL COMMISSIONING

The initial commissioning of a power plant refers to the time frame between the completion of the construction and the reliable production of electricity for sale on the market. For most power plants operating emission limits usually do not apply during the initial commissioning procedures.

Startup and commissioning for the SJVEC CTG/HRSGs is estimated to last no less than three months from first fire to completion of acceptance testing of all three CTGs (SJVEC 2002a, DR #20, page 10). Each CTG would typically be commissioned on a slightly staggered schedule to best utilize onsite personnel and resources. Normally, only one CTG is in operation at any given time. When multiple CTGs are operating during the commissioning period (up to three), only one turbine may be out of compliance with its air quality permit conditions. The Applicant expects to prepare and submit a commissioning plan prior to commencement of commissioning providing more project-specific details.

The Applicant has stated they would minimize emissions of CO, NO<sub>x</sub>, and other pollutants from the SJVEC by limiting the test time of each commissioning activity to the shortest duration feasible. The NO<sub>x</sub> and CO catalyst are proposed to be installed at the earliest possible time in the testing cycle, consistent with manufacturer's recommendations.

Prior to initial startup of each CTG/HRSG, a continuous emissions monitoring (CEM) system would be installed, tested, and calibrated to measure criteria pollutants during startup and commissioning.

The range of commissioning tests for each CTG/HRSG at the SJVEC includes the following: 1) full speed no load test; 2) partial (60 percent) load test; 3) full load test with no SCR; 4) full load test with partial SCR; 5) full load test with full SCR; and 6) hot startup testing. The Applicant has estimated the initial commissioning emissions in **AIR QUALITY Table 20**.

**AIR QUALITY Table 20**  
**Initial Turbine Commissioning Emissions**

Commissioning Activities	Operation Duration <sup>a</sup>	Fuel Use <sup>b</sup>	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
(per CTG/HRSG)	(Hours)	(MMBtu/h, HHV)	Hourly Emissions, lb/hr				
Full Speed, No Load Test	72	355	125.0	180.0	17.0	9.0	0.25
60% Load Test	144	1,331	128.0	385.0	16.0	9.0	0.95
Full Load Test, No SCR	48	1,968.5	189.0	46.0	3.48	9.0	1.40
Full Load Test, Partial SCR	24	1,968.5	103.4	26.1	3.48	9.0	1.40
Full Load Test, Full SCR	600	1,968.5	17.83	26.1	3.48	9.0	1.40
Hot Starts	6	---	80.00	902.0	16.0	11.5	1.84
<b>Total</b>	<b>2,682</b>		<b>150,491</b>	<b>276,919</b>	<b>17,896</b>	<b>24,182</b>	<b>3,313</b>

From Data Response, Set 2A (SJVEC 2002b) Attachment AQ-157.

Note(s):

a. Hours of operation based on information provided by Calpine.

b. Fuel Use: No load test based on information provided by Calpine; 60 percent Load test based on 60 percent fuel use for a GE 501F CTG at 36°F, Full load test based on baseload fuel use for a GE 501F CTG at 36°F.

Although Table 20 would suggest that the period of time (2682 hours) of initial commissioning would seem long, that figure represents the hours for all three turbines. Each turbine was estimated to operate approximately 894 hours under initial commissioning; 600 hours of that time would be fully abated with control technology. Unabated emissions would be on the order of about 300 hours per turbine. This unabated emissions scenario and the types of tests planned is consistent with a detailed commissioning scenario submitted to the CEC for a similar project, the Duke Moss Landing Power Plant Project (Duke 2002).

## PROJECT IMPACTS

### MODELING APPROACH

The Applicant performed an air dispersion modeling analysis to evaluate the project's potential impacts on the existing ambient air pollutant levels, both during construction and operation. An air dispersion modeling analysis usually starts with a conservative screening level analysis. Screening models use very conservative assumptions, such as for the meteorological conditions, which may or may not actually occur in the area. The impacts calculated by screening models, therefore, can be double or more than the actual or expected impacts. If the screening level impacts are significant, refined modeling analysis is performed. A major difference in the refined modeling is that hour-by-hour meteorological data collected in the vicinity of the project site is used.

The Applicant has used the U.S. EPA's Industrial Source Complex (ISC), Short-Term Model (ISCST3, Version 00101), to estimate the impacts of the project's NO<sub>x</sub>, PM<sub>10</sub>, CO and SO<sub>x</sub> emissions resulting from project construction and operation. The ISC model is a steady-state Gaussian plume model, appropriate for regulatory use, that can be used to assess pollution concentrations from a wide variety of emission sources.

The Applicant has used the SCREEN3 model to determine worst-case 1-hour NO<sub>2</sub>, CO and SO<sub>2</sub> impacts under fumigation conditions. The SCREEN3 model is a steady-state Gaussian plume model, appropriate for the screening level modeling of single point sources to assess worst-case impacts.

For 1-hour average operating NO<sub>x</sub> modeling, the Applicant provided a refined modeling analysis using the ozone limiting method (OLM) model (ISC3\_OLM, Version 96113). This method calculates the maximum NO to NO<sub>2</sub> conversion using ozone concentration files to determine maximum 1-hour NO<sub>2</sub> concentrations assuming that 10 percent of the tailpipe NO<sub>x</sub> is NO<sub>2</sub> and that there is a 100 percent conversion of NO to NO<sub>2</sub> through a chemical reaction with the ozone. This method is somewhat conservative in that it does not consider mixing or ozone consumption limitations in determining maximum NO<sub>2</sub> concentrations. This modeling method is accepted by the USEPA and CARB for 1-hour NO<sub>2</sub> modeling.

For 1-hour average construction NO<sub>x</sub> modeling, the Applicant provided a refined modeling analysis using a non-regulatory ozone limiting method (OLM) modeling approach. The Applicant used a spreadsheet averaging approach to determine the average ozone concentrations for NO to NO<sub>2</sub> conversion. The Applicant could not use the approved OLM approach because all construction emissions were modeled as area sources. Staff remodeled the construction emissions using a combination of point sources, volume sources, and an area source and was able to use the approved OLM modeling approach.

A description of the Applicant's modeling analyses is provided in Section 8.1.5.1.2 of the AFC (SJVEC 2001a, pages 8.1-30 to 42) and in the Appendices (SJVEC 2001a, Appendix 8.1B - Modeling Analysis and Appendix 8.1D - Construction Phase Impacts). The Applicant utilized hourly meteorological data collected at Lemoore Naval Air Station, for the years 1992 to 1995 and 1997, as recommended by SJVAPCD. Due to missing data, the 1996 data set was not used and was substituted with the 1997 data set (SJVEC 2001b, page 4 to 5).

Staff's analysis of the meteorological data set determined that there are apparent problems with how the meteorological data set was processed. Staff has determined that some of the missing data was not filled in correctly, with missing wind speed data being improperly set to zero. This caused associated problems with stability class determination, which caused the overestimation of short-term impacts and the very slight underestimation of annual impacts. Staff attempted to correct the most significant of the improper wind speed assignments through the correction of 56 wind speeds and 54 associated stability class assignments in 69 hours of the meteorological data set. The staff's modeling analysis uses this corrected meteorological data.

The Applicant revised the construction impact modeling analysis (SR 2002c) based on revised emission estimates. As noted earlier the justification for the maximum gaseous pollutant emission revisions was not adequately explained by the Applicant and those revised modeling results are not presented in the Staff Assessment. The revised construction PM<sub>10</sub> modeling results are provided in the Staff Assessment.

## CONSTRUCTION IMPACTS

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the Applicant and, as necessary, separately estimated by CEC staff.

### ***Applicant Construction Impact Analysis***

The Applicant modeled the emissions of the SJVEC onsite construction activities. This analysis was completed using the ISCST3 (Version 00101) model. The exhaust and fugitive dust emissions were modeled as single area sources that covered the total area of the construction site (SJVEC 2001a, Appendix 8.1D, page 8.1D-5). The emissions were modeled using hourly temporal factors when modeling the short-term averaging periods (i.e. 1-hour through 24-hour). It was assumed that all of the equipment that operated during a particular month would operate for a full eight hours five days a week during that month. However, the Applicant has determined that construction will be expected to occur from 7 am to 3:30 pm, five days per week. If project construction is accelerated, the Applicant expects to extend this to a 10-hour day that would last from 7 am to 5 pm (SJVEC 2002b, DR#151, page 3). **AIR QUALITY Table 21** provides the results of this modeling analysis, and the results of the revised PM<sub>10</sub> modeling analysis (SR 2002c) are shown in parenthesis.

**AIR QUALITY Table 21**  
**SJVEC Ambient Air Quality Impact**  
**Applicant Construction ISC Modeling Results**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> ) <sup>b</sup>	Total Impact (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	216.1	161.7	377.8	470	CAAQS	80
	Annual	36.7	30.2	66.9	100	NAAQS	67
PM <sub>10</sub>	24-Hour	118.4 (54.4)	<b>146</b> <b>146</b>	<b>264.4</b> <b>(200.4)</b>	50 50	CAAQS	<b>529</b> <b>(401)</b>
	Annual	25.7 (5.0)	<b>41.9</b> <b>41.9</b>	<b>67.6</b> <b>(46.9)</b>	30 30	CAAQS	<b>225</b> <b>(156)</b>
CO	1-Hour	415.0	4,370	4,785	23,000	CAAQS	21
	8-Hour	150.5	2,900	3,051	10,000	CAAQS	31
SO <sub>2</sub>	1-Hour	38.5	28.8	67.3	655	CAAQS	13
	3-Hour	21.7	26.0	47.7	1,300	NAAQS	4
	24-Hour	7.3	16.5	23.8	105	CAAQS	23
	Annual	1.4	8.5	9.9	80	NAAQS	12

From AFC (SJVEC 2001a) Appendix 8.1D, Table 8.1D-6, page 8.1D-6.

Note(s):

a. 1-hour NO<sub>x</sub> value was modeled using OLM\_ISC. The annual value is multiplied by the Annual NO<sub>x</sub> Ratio Method (ARM) of 0.75.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

As can be seen from the modeling results provided in **AIR QUALITY Table 21**, the construction PM<sub>10</sub> (24-hour and annual) impacts exceed the ambient air quality standards and are therefore significant. The Applicant's results show that over 80 percent (98.7 µg/m<sup>3</sup> out of 118.4 µg/m<sup>3</sup>) of the maximum modeled 24-hour PM<sub>10</sub> concentrations from construction activities are due to fugitive dust from construction

activities rather than to exhaust from construction equipment. On an annual average basis, the exhaust contribution is only about 15 percent of the total PM<sub>10</sub> impact.

The revised PM<sub>10</sub> modeling analysis conducted by the Applicant (SR 2002c) assumes extremely aggressive PM<sub>10</sub> fugitive dust control efficiencies, which is considered to be unrealistic without very aggressive compliance demonstration requirements.

The potential ambient air quality impacts associated with the construction of the natural gas pipeline, recycled water pipeline and the transmission line interconnect are expected to be minimal since construction would occur for a short duration, require minimal equipment, and would generally occur along public roads and utility right-of-ways over a large geographical area (SJVEC 2001a, Appendix 8.1D, page 8.1D-7). Therefore, these activities were not included in the Applicant's construction impact modeling analysis.

### **Staff Construction Impact Analysis**

Staff remodeled the construction emissions using a combination of point sources, volume sources, and an area source. Additionally, staff used the corrected meteorological file in its modeling analysis. Staff modeled the Applicant's suggested 7 am to 5 pm daily construction schedule, as well as an unlimited daily construction schedule to assess the potential short-term averaging period construction impacts that could occur without any restrictions to the construction schedule. **AIR QUALITY Tables 22 and 23** provide the results of this modeling analysis.

**Air Quality Table 22**  
**SJVEC Ambient Air Quality Impact**  
**Staff Construction ISC Modeling Results**  
**7 am to 5 pm Construction Schedule**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> ) <sup>b</sup>	Total Impact (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	317.9	161.7	<b>479.6</b>	470	CAAQS	<b>102</b>
	Annual	7.3	30.2	37.5	100	NAAQS	38
PM <sub>10</sub>	24-Hour	64.9	<b>146</b>	<b>211</b>	50	CAAQS	<b>422</b>
	Annual	11.0	<b>41.9</b>	<b>52.9</b>	30	CAAQS	<b>176</b>
CO	1-Hour	217	4,370	4,587	23,000	CAAQS	20
	8-Hour	119	2,900	3,019	10,000	CAAQS	30
SO <sub>2</sub>	1-Hour	20.0	28.8	48.8	655	CAAQS	7
	3-Hour	12.9	26.0	38.9	1,300	NAAQS	3
	24-Hour	5.1	16.5	21.6	105	CAAQS	21
	Annual	0.32	8.5	8.8	80	NAAQS	11

Note(s):

a. 1-hour NO<sub>x</sub> value was modeled using NO<sub>x</sub>-OLM. The annual value is multiplied by the Annual NO<sub>x</sub> Ratio Method (ARM) of 0.75.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

**Air Quality Table 23**  
**SJVEC Ambient Air Quality Impact**  
**Staff Construction ISC Modeling Results**

### Unlimited Daily Construction Schedule – Short Term Impacts

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	317.9	161.7	<b>479.6</b>	470	CAAQS	<b>102</b>
PM <sub>10</sub>	24-Hour	184.0	<b>146</b>	<b>330</b>	50	CAAQS	<b>660</b>
CO	1-Hour	272	4,370	4,642	23,000	CAAQS	20
	8-Hour	148	2,900	3,048	10,000	CAAQS	30
SO <sub>2</sub>	1-Hour	25.2	28.8	54.0	655	CAAQS	8
	3-Hour	16.1	26.0	42.1	1,300	NAAQS	3
	24-Hour	6.8	16.5	23.3	105	CAAQS	22

Note(s):

a. 1-hour NO<sub>x</sub> value was modeled using OLM\_ISC.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

As Tables 22 and 23 show the predicted maximum fence line construction NO<sub>2</sub> impacts have the potential to nominally exceed the 1-hour CAAQS. However, the ozone limiting method does not consider the time it takes for the NO to NO<sub>2</sub> conversion or the mixing and consumption of the ozone that takes place in the NO to NO<sub>2</sub> conversion. The receptors show to have modeled impacts that could exceed the 1-hour CAAQS all occurred adjacent to the project's fence line. However, the actual amount of ozone mixing into the plume, and the time from the tailpipe to the receptor point would both be inadequate to result in the NO to NO<sub>2</sub> conversion predicted by the model. A violation of the state 1-hour NO<sub>2</sub> standard is unlikely to occur. Therefore, staff does not consider the project's 1-hour NO<sub>2</sub> construction impacts to be significant.

Staff's construction modeling analysis indicates that the maximum CO and SO<sub>2</sub> impacts will remain well below the CAAQS and NAAQS; therefore, there are no significant construction impacts for these two pollutants.

The predicted maximum 24-hour and annual PM<sub>10</sub> concentrations are potentially significant. Additionally, as shown in Table 23 increasing the construction schedule greatly increases the predicted maximum 24-hour concentrations. The maximum project 24-hour construction PM<sub>10</sub> impacts are predicted to occur at the fence line and they decrease with distance. However, the maximum PM<sub>10</sub> concentrations predicted to occur within the residential areas of the City of San Joaquin are over 30  $\mu\text{g}/\text{m}^3$  for an unlimited construction schedule, and over 10  $\mu\text{g}/\text{m}^3$  for a 7 am to 5 pm construction schedule. Additionally, the more hazardous diesel equipment exhaust PM<sub>10</sub> impacts were found to be over 5  $\mu\text{g}/\text{m}^3$  within the City of San Joaquin. Therefore, staff is recommending appropriate mitigation to minimize the construction emissions and to otherwise mitigate the construction 24-hour PM<sub>10</sub> ambient air quality impacts.

The annual PM<sub>10</sub> construction impacts decrease very rapidly with distance and the predicted concentrations within the residential areas of the City of San Joaquin are approximately 0.25  $\mu\text{g}/\text{m}^3$ . The maximum residential impact of approximately 1.5  $\mu\text{g}/\text{m}^3$  is predicted to occur at a single residential receptor located approximately 1,000 feet south of the project fence line.

Staff did not conduct a revised modeling analysis based on the Applicant's revised onsite construction emission estimate (SR 2002c). Modeling the Applicant's revised emission estimates would cause a reduction in the modeled concentrations for all pollutants, except for CO which would increase slightly.

## **OPERATION IMPACTS**

The following section discusses the project's direct ambient air quality impacts, as estimated by the Applicant, and evaluated by CEC staff. The Applicant performed direct impact modeling analyses, including operations impact modeling and fumigation impact modeling.

### ***Operational Modeling Analysis***

A refined modeling analysis was performed to identify off-site criteria pollutant impacts from operational emissions of the proposed project. The impact modeling analysis included both maximum operating and startup/shutdown scenarios to determine maximum short-term and annual emission impacts. Turbine emission rates were calculated from equipment vendor estimates for five load conditions:

- Case 1 – 100°F ambient temperature, 100 percent load with duct firing and power augmentation,
- Case 2 – 100°F, 70 percent load,
- Case 3 – 61°F, 100 percent load,
- Case 4 – 32°F, 100 percent load, and
- Case 5 – 32°F, 70 percent load.

Because the emergency generator and fire pump will not be tested during the same hour, screening was performed to determine which had the higher impacts for each pollutant during that averaging period. The fire pump had higher impacts for 1-hr CO and 1-hr SO<sub>2</sub> while the emergency generator had higher 1-hour NO<sub>x</sub> impacts. Fire pump operation will be restricted to 45 minutes out of any hour and 100 hours per year. Emergency generator operation will be limited to 200 hours per year. The auxiliary boiler operates at full load 24 hours per day on the worst-case day and 3,000 hours per year. Startup emissions assume one turbine in startup and two turbines at peak load.

The ISCST3 model (Version 00101) was used for the refined modeling analysis. One-hour NO<sub>2</sub> impacts were modeled using ISC3\_OLM model (Version 96113). For this refined modeling analysis, the Applicant conducted a Good Engineering Practice (GEP) stack height analysis using the Building Profile Input Program (BPIP) Version 98086, and downwash effects were modeled for the facility using the ISCST3 model. Five years of meteorological data (1992 to 1995 and 1997) from Lemoore Naval Air Station were used in the modeling analysis.

The Applicant's predicted maximum concentrations of the non-reactive pollutants are summarized in **AIR QUALITY Table 24**.

### **Air Quality Table 24 SJVEC Ambient Air Quality Impact**

### Applicant Operational Impact ISC Modeling Results

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>	Background ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub>	1-Hour	39.9 <sup>c</sup>	161.7	201.6	470	CAAQS	43
	Annual	0.6 <sup>d</sup>	30.2	30.8	100	NAAQS	31
PM <sub>10</sub>	24-Hour	4.9	<b>146</b>	<b>151</b>	50	CAAQS	<b>302</b>
	Annual	0.5	<b>41.9</b>	<b>42.4</b>	30	CAAQS	<b>141</b>
CO	1-Hour	1,080.4	4,370	5,450	23,000	CAAQS	24
	8-Hour	138.3	2,900	3,038	10,000	CAAQS	30
SO <sub>2</sub>	1-Hour	20.7	28.8	49.5	655	CAAQS	8
	3-Hour	4.6	26.0	30.6	1300	NAAQS	2
	24-Hour	0.4	16.5	16.9	105	CAAQS	16
	Annual	0.03	8.5	8.53	80	NAAQS	11

From AFC (SJVEC 2001a) Table 8.1-29, page. 8.1-40.

Note(s):

a. Worst-case impact for applicable averaging time, including fumigation and startup.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

c. The worst-case 1-hr NO<sub>2</sub> impacts are conservative as they assume a HRSG outlet NO<sub>x</sub> concentration of 2.5 ppm and does not include the diesel fire pump and emergency generator. The maximum 1-hr NO<sub>2</sub> impact modeled with the emergency equipment was found to be 251.7  $\mu\text{g}/\text{m}^3$ .

d. Modeled annual NO<sub>x</sub> corrected to NO<sub>2</sub> using ARM default value of 0.75.

The Applicant's modeling results indicate that the project's operational impacts would not create violations of NO<sub>2</sub>, SO<sub>2</sub> or CO standards, but could further exacerbate violations of the PM<sub>10</sub> standards. In light of the existing PM<sub>10</sub> non-attainment status for the project site area, the modeled impacts are considered to be significant and therefore must be mitigated. Staff's modeling analysis, which includes updated emission estimates for the SJVEC and revised meteorological files is presented in Tables 26 through 28.

The Applicant provided a commissioning modeling analysis to determine maximum 1-hour NO<sub>2</sub> concentrations; however, the maximum hourly commissioning NO<sub>x</sub> emissions basis was revised since that analysis was performed and staff has concerns that the NO<sub>x</sub> OLM modeling approach may underestimate the initial NO<sub>2</sub>/NO<sub>x</sub> ratio at the point of exhaust. Therefore, the results of that analysis are not presented. Staff conducted a separate commissioning emissions modeling, which is presented in Table 28.

#### Fumigation Modeling Impact Analysis

There is the potential that higher short-term concentrations may occur during fumigation conditions. During the early morning hours before sunrise, the air is usually very stable. During such stable meteorological conditions, emissions from elevated stacks rise through this stable layer and are dispersed. When the sun first rises, the air at ground level is heated, resulting in a vertical (both rising and sinking air) mixing of air for a few hundred feet or so. Emissions from a stack that enter this vertically mixed layer of air will also be vertically mixed, bringing some of those emissions down to the ground level. Later in the day, as the sun continues to heat the ground, this vertical mixing layer becomes higher and higher, and the emissions plume becomes better dispersed. The early morning pollution event, called fumigation, usually lasts approximately 30 to 90 minutes.

Fumigation conditions are generally only compared to 1-hour standards. The Applicant analyzed the air quality impacts under fumigation conditions from the project turbines, auxiliary boiler, emergency generator and fire pump using the SCREEN3 model. The results of the analysis, as shown in **AIR QUALITY Table 25**, indicate that the fumigation impacts would not exceed applicable 1-hour AAQS.

**Air Quality Table 25**  
**Maximum 1-Hour SJVEC Fumigation Impacts, ( $\mu\text{g}/\text{m}^3$ )**

Pollutant	Maximum Total Impact	Background <sup>a</sup>	Total	Standard	Standard
<b>Concentrations at Turbine Fumigation Location</b>					
CO	32.2	4,370	4,402	23,000	CAAQS
NO <sub>2</sub>	24.1	161.7	185.8	470	CAAQS
SO <sub>2</sub>	1.18	28.8	30.0	655	CAAQS
<b>Concentrations at Auxiliary Boiler Fumigation Location</b>					
CO	48.2	4,370	4,418	23,000	CAAQS
NO <sub>2</sub>	42.4	161.7	204.1	470	CAAQS
SO <sub>2</sub>	0.73	28.8	29.5	655	CAAQS

From AFC (SJVEC 2001a) Appendix 8.1-B, Table 8.1B-6, page 8.1B-7.

Note(s):

a. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

Maximum fumigation impacts for the turbines and auxiliary boiler were predicted to occur at about 15 km and 5 km, respectively, from the facility. No fumigation was predicted to occur for the emergency generator or fire pump exhaust due to their short stacks. The impacts under fumigation conditions are expected to be lower than the maximum concentrations calculated by ISC under downwash conditions (SJVEC 2001a, pages 8.1-34 to 35).

Staff has reviewed the fumigation modeling results and has found the input values to be reasonable, but found the output results to be somewhat lower than what staff would have determined for the turbine fumigation (CO – 166  $\mu\text{g}/\text{m}^3$ , NO<sub>2</sub> – 44.1  $\mu\text{g}/\text{m}^3$ ) and somewhat higher than staff would have determined for the auxiliary boiler fumigation (CO – 10.5  $\mu\text{g}/\text{m}^3$ , NO<sub>2</sub> – 8.4  $\mu\text{g}/\text{m}^3$ ). However, staff agrees that there will be no significant ambient air quality impacts due to fumigation.

### **Staff Operations Impact Analysis**

Staff remodeled the operational emissions to incorporate the following revisions that have occurred since the applicant's modeling analysis:

- Revised meteorological data
- Revised engine emission estimate (short-term modeling only)
- Revised commissioning emissions estimate

Staff modeled the “normal” emissions, worst-case start-up emissions (short-term only) and commissioning emissions (1-hour NO<sub>x</sub> only). Normal emissions are defined as following:

### **Short-term Averaging Period Assumptions**

- The three turbines operating with duct firing from noon to 8 pm and without duct firing from 8 pm through noon.
- Cooling tower operating 24 hours/day.

#### Annual Averaging Period Assumptions

- All emission sources operating with hourly emissions based on annual average emissions.

The results of the “normal” emissions modeling analysis are shown in **AIR QUALITY Table 26**.

**Air Quality Table 26**  
**SJVEC Ambient Air Quality Impact**  
**Staff “Normal” Operational Impact ISC Modeling Results**

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	21.8	161.7	183.5	470	CAAQS	39
	Annual	0.54	30.2	30.7	100	NAAQS	31
PM <sub>10</sub>	24-Hour	3.8	<b>146</b>	<b>150</b>	50	CAAQS	<b>300</b>
	Annual	0.22	<b>41.9</b>	<b>42.1</b>	30	CAAQS	<b>140</b>
CO	1-Hour	21.3	4,370	4,391	23,000	CAAQS	19
	8-Hour	6.9	2,900	2,907	10,000	CAAQS	29
SO <sub>2</sub>	1-Hour	1.7	28.8	30.5	655	CAAQS	5
	3-Hour	1.0	26.0	27.4	1,300	NAAQS	2
	24-Hour	0.25	16.5	16.8	105	CAAQS	16
	Annual	0.03	8.5	8.5	80	NAAQS	11

Note(s):

a. No adjustment to the modeled 1-hour NO<sub>x</sub> value was made and are conservative since they were based on HRSG emissions at 2.5 ppm. The annual modeled NO<sub>x</sub> concentration value is multiplied by the Annual NO<sub>x</sub> Ratio Method (ARM) of 0.75.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

The modeling results indicate that the project's operational impacts would not create violations of NO<sub>2</sub>, SO<sub>2</sub> or CO standards, but could further exacerbate violations of the PM<sub>10</sub> standards. In light of the existing PM<sub>10</sub> non-attainment status for the project site area, the modeled impacts are considered to be significant and therefore must be mitigated.

The maximum PM<sub>10</sub> 24-hour impacts are predicted to occur approximately 100 meters to the northeast of the fence line in an unpopulated area. The maximum PM<sub>10</sub> 24-hour impacts predicted to occur in the residential areas of the City of San Joaquin are approximately 1  $\mu\text{g}/\text{m}^3$ . The maximum annual PM<sub>10</sub> concentration is predicted to occur approximately 1 mile south of the project site and the maximum PM<sub>10</sub> annual impacts predicted to occur in the residential areas of the City of San Joaquin are approximately 0.028  $\mu\text{g}/\text{m}^3$ .

Worst-case start-up emissions are based on the maximum emissions profile for each pollutant and are defined as following:

#### 1-Hour Averaging Period Assumptions (NO<sub>x</sub>, CO and SO<sub>2</sub>)

- One turbine is in start-up mode and the two others are running at full load with duct firing, except for SO<sub>2</sub> where all three turbines are operating at full load with duct firing.
- The auxiliary boiler is operating at full load.
- The emergency generator or firewater pump engine is being tested (whichever is the worst-case for CO and SO<sub>2</sub>)

#### 3-Hour Averaging Period Assumptions (SO<sub>2</sub>)

- All three turbines operating at full load with duct firing.
- The auxiliary boiler is operating at full load.
- The emergency generator and firewater pump engine are tested.

#### 8-Hour Averaging Period Assumptions (CO)

- All three turbines have undergone start-up and are operating at full load with duct firing for the other 5 hours.
- The auxiliary boiler is operating at full load.
- The emergency generator and firewater pump engine are tested.

#### 24-Hour Averaging Period Assumptions (SO<sub>2</sub>)

- All three turbines operating at full load with duct firing.
- The auxiliary boiler is operating at full load.
- The emergency generator and firewater pump engine are tested.

The worst-case emergency engine 1-hour NO<sub>x</sub> impacts were modeled separately using NO<sub>x</sub>\_OLM. The results of the worst-case start-up emissions modeling analysis are shown in **AIR QUALITY Table 27**.

**Air Quality Table 27**  
**SJVEC Ambient Air Quality Impact**  
**Staff Worst-Case Start-up Short-Term Operational Impact ISC Modeling**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> ) <sup>b</sup>	Total Impact (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	156.0	161.7	317.7	470	CAAQS	68
CO	1-Hour	646	4,370	5,738	23,000	CAAQS	22
	8-Hour	124	2,900	3,024	10,000	CAAQS	30
SO <sub>2</sub>	1-Hour	20.8	28.8	49.6	655	CAAQS	8
	3-Hour	6.9	26.0	32.9	1,300	NAAQS	3
	24-Hour	0.87	16.5	17.4	105	CAAQS	17

Note(s):

a. Maximum 1-hour Turbine start-up concentrations. The maximum fire pump engine NO<sub>x</sub> value was modeled using NO<sub>x</sub>\_OLM and was found to be 234.6 µg/m<sup>3</sup>.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

Commissioning emissions were modeled for three separate high emission events: no load first fire; 60 percent load no SCR; and full load no SCR. The exhaust parameters were determined through linear interpolation of the fuel use estimates provided by the Applicant. Additionally, it was assumed that during the no load first fire case the exhaust temperature is 800°F (i.e. no heat recovery in the HRSG), while the exhaust temperatures for the other cases are based on the normal non-duct firing operating case. The two other turbines were modeled assuming that they were operating at full load with duct firing while the third turbine was being commissioned. The Applicant has stipulated that they will only commission one turbine at a time. The results of the commissioning emissions modeling analysis are shown in **AIR QUALITY Table 28**.

**Air Quality Table 28**  
**SJVEC Ambient Air Quality Impact**  
**Staff Commissioning Worst-Case Short-Term Engine Impact ISC Modeling**

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	120.3	161.7	282	470	CAAQS	60

Note(s):

a. Maximum 1-hour Turbine commissioning concentrations. NO<sub>x</sub> OLM modeling was not performed as modeled impacts did not require refined OLM modeling.

b. Background values have been adjusted per staff recommended background concentrations shown in Table 9.

The worst-case commissioning event was determined to be the 60 percent load no SCR case. The modeling results indicate that the commissioning emissions do not have the potential to cause create significant ambient air quality impacts.

### **Secondary Pollutant Impacts**

The project's gaseous emissions of NO<sub>x</sub>, SO<sub>2</sub>, VOC and ammonia can contribute to the formation of secondary pollutants, ozone and PM<sub>10</sub>. There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. No regulatory agency models are approved for assessing single source ozone impacts. However, because of the known relationship of NO<sub>x</sub> and VOC emissions to ozone formation, it can be said that the emissions of NO<sub>x</sub> and VOC from the SJVEC do have the potential (if left unmitigated) to contribute to higher ozone levels in the region.

Secondary PM<sub>10</sub> formation is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds. Currently, there are no agency (EPA or CARB) recommended models or procedures for estimating nitrate or sulfate formation. However, because of the known relationship of NO<sub>x</sub> and SO<sub>2</sub> emissions to secondary PM<sub>10</sub> formation, it can be said that the emissions of NO<sub>x</sub> and SO<sub>2</sub> from the SJVEC do have the potential (if left unmitigated) to contribute to higher PM<sub>10</sub> levels in the region.

The ammonia emissions from the project would come from the SCR system, which controls the NO<sub>x</sub> emissions, as unreacted ammonia, or "ammonia slip," that remains in the exhaust after passing through the SCR catalyst system. The San Joaquin Valley, as a result of agricultural ammonia emissions, is ammonia rich, meaning that ammonia is not the limiting reactant for secondary PM<sub>10</sub> formation. This means higher ammonia emissions will not necessarily result in additional secondary PM<sub>10</sub> formation; however, reducing NO<sub>x</sub> emissions will almost certainly reduce secondary PM<sub>10</sub> formation. While the ammonia emissions are recognized as a necessary by-product of the NO<sub>x</sub> control system, staff still encourages the Applicant to control their ammonia slip emissions to the lowest possible extent, while maintaining the guaranteed NO<sub>x</sub> emission limit.

The Applicant is proposing to mitigate the project's NO<sub>x</sub> and VOC emissions through the use of emission offsets. The NO<sub>x</sub> and VOC offsets, even considering the District's

offset thresholds and exempt emission sources, will be provided at greater than a 1:1 ratio. The Applicant is not currently proposing to mitigate the project's SO<sub>2</sub> emissions. Staff is recommending that SO<sub>2</sub> offsets be required at a 1:1 ratio to mitigate the project's SO<sub>2</sub> emissions. With this additional offset mitigation it is staff's determination that the project will not cause significant secondary pollutant impacts.

### **Odor Assessment**

No odor impact is anticipated from the operation of the main power facilities, as no significant emissions of odorous compounds would result from the gas turbines, auxiliary boiler, cooling tower, natural gas compressors, or emergency equipment exhausts under normal operations. The odor threshold for ammonia is approximately 5 to 10 ppm, and the stack emissions of ammonia for the gas turbine and auxiliary boiler exhausts will be limited to 10 ppm on a 24-hour basis. There is the potential for somewhat higher short-term ammonia emission concentrations (i.e. concentration spikes), particularly during startup, shutdown or during load swings. However, after dispersion the maximum ammonia concentrations at ground level will be well below the odor threshold. Odors resulting from accidents could occur; please see the HAZARDOUS MATERIAL section for further discussion of the consequence analysis of ammonia storage and handling accidents.

### **VISIBILITY IMPACTS**

A visibility analysis of the project's gaseous emissions is required under the Federal Prevention of Significant Deterioration (PSD) permitting program. The SJVEC project is considered a new major source for both NO<sub>x</sub> and CO. Emissions of SO<sub>2</sub> and VOC from the project would be below the 100 tons per year major source threshold. However, since the project is considered a major source for at least one criteria pollutant, PSD review is required for the entire facility. The Applicant's screening level modeling analysis indicated that the project's impacts are below the PSD significance thresholds (SJVEC 2001a, Table 8.1-32, page 8.1-42), therefore no further analysis was performed. The nearest Class I area is Pinnacles Wilderness, located between 50 and 100 km from the project site.

The EPA has not completed their processing of the SJVEC PSD application and has not received comment on the visibility analysis from the National Forest Service. However, due to the distance to the nearest Class I area, staff considers it likely that the project's visibility impacts to Class I areas would be insignificant.

### **MITIGATION**

#### **Construction Mitigation**

As described in the applicable LORS section, District Regulation VIII (i.e. Series 8000) rules limit fugitive dust during the construction phase of a project. Staff will recommend that construction emission impacts be mitigated to the greatest feasible extent including all feasible measures from the LORS, as well as other measures considered necessary by staff to fully mitigate the construction emissions.

## **Applicant's Proposed Mitigation**

In the AFC (SJVEC 2001a, Appendix 8.1D, page 8.1D-2) the Applicant proposes to implement the following measures to reduce emissions during construction activities. The Applicant's PM<sub>10</sub> emissions estimates in **AIR QUALITY Tables 10 to 14** and construction modeling results in **AIR QUALITY Tables 21 to 23** assume the use of these emission control measures.

To control exhaust emissions from heavy diesel construction equipment:

- Limit engine idling time and shutdown equipment when not in use (a specific time limit was not provided).
- Perform regular preventative maintenance to reduce engine problems.
- Use CARB low-sulfur and low aromatic fuel for all heavy construction equipment.
- Use low-emitting diesel engines meeting EPA emission standards for construction equipment.

To control fugitive dust emissions:

- Use water application or chemical dust suppressant on unpaved travel surfaces and unpaved parking areas.
- Use vacuum sweeping or water flushing on paved travel surfaces and parking areas.
- Require all trucks hauling loose material to cover the contents or maintain a minimum of two feet of freeboard.
- Limit traffic speed on unpaved roads to 25 miles-per-hour (mph).
- Install sandbags or other erosion control measures.
- Re-plant vegetation in disturbed areas as soon as possible.
- Use gravel pads and wheel washers or wash truck tires leaving the construction site as needed.
- Use wind breaks and/or water or chemical dust suppressant to control wind erosion from disturbed areas.

## **Adequacy of Proposed Mitigation**

The applicant's proposed mitigation was included in the modeling analysis as summarized on **AIR QUALITY Tables 21 to 23**. The Applicant's revised PM<sub>10</sub> emission estimate assumes a very aggressive control efficiency factor for fugitive dust control (88 percent). However, even with this control efficiency factor included, the modeling analysis shows that the construction PM<sub>10</sub> impacts are predicted to be potentially significant even with implementation of the Applicant's proposed mitigation measures. Additionally, without ongoing compliance monitoring and demonstration, the control efficiency used by the Applicant in their emission estimates are highly questionable. Therefore, the Applicant's proposed mitigation is not considered adequate.

The maximum 24-hour PM<sub>10</sub> impacts occur to the southeast and northwest of the proposed project site and are highest at the fence line and decrease with distance from the proposed project site. The directions of maximum impact correspond to the prevalent annual wind direction (to the southeast) and the prevalent winter wind direction (to the northwest). The center of the town of San Joaquin is located less than a mile northwest from the project site. The 24-hour PM<sub>10</sub> construction impact concentrations, considering limitations to the construction schedule, were determined by the applicant, after remodeling, to be between 7 to 10 ug/m<sup>3</sup> at affected receptors within the town of San Joaquin.

Staff is proposing additional construction mitigation measure to mitigate the potentially significant construction PM<sub>10</sub> impacts.

### **Staff Proposed Mitigation**

Staff is recommending construction PM<sub>10</sub> emission mitigation measures that include some of the mitigation measures proposed by the Applicant and several additional construction PM<sub>10</sub> emission mitigation measures and compliance assurance measures in Conditions of Certification **AQ-C1** through **AQ-C5**. Please note that staff's proposed construction conditions have been revised to address comments from the Applicant, and have also been revised in order to be updated, consolidated, and streamlined.

Staff recommends **AQ-C1** to require the applicant to have an on-site construction mitigation manager, who will be responsible for the implementation and compliance of the construction mitigation program. A construction mitigation plan is required to be submitted for approval under staff's recommended Condition of certification **AQ-C2**. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly construction compliance report.

Staff recommends PM<sub>10</sub> mitigation measures be provided in Condition of Certification **AQ-C3**. **AQ-C3** includes the following revisions to, or additions to, the fugitive dust mitigation measures proposed by the Applicant.

- The addition of construction diesel equipment emission mitigation measures.
- Covering and treatment of soil stockpiles;
- Limit traffic speed to 10 mph;
- Suspension of fugitive dust causing activities under windy (i.e. sustained winds >25 mph) conditions;
- Additional mitigation measures to be implemented, if necessary, based on the impacts found during monitoring.
- Incorporation of SJVEC fugitive dust regulation requirements.

Staff recommends Conditions of Certification **AQ-C4** to limit visible emissions from construction activities at the construction sites, and limit the project related construction visible emissions from occurring within 100 feet of occupied structures.

Staff recommends Condition of Certification **AQ-C5** to require the Applicant to conduct ambient air monitoring during excavation, earthmoving and grading activities, where differences in the upwind and downwind PM<sub>10</sub> concentrations of greater than 5 ug/m<sup>3</sup> will trigger additional fugitive dust mitigation measures. Staff has concluded that maintaining the 24-hour construction PM<sub>10</sub> residential impacts to less than 1 ug/m<sup>3</sup> would constitute a less than significant impact. An analysis of the modeling results indicates that maintaining the fence line construction PM<sub>10</sub> concentrations, which are the difference in the upwind and downwind concentrations at the fence line, to no more than 5 ug/m<sup>3</sup> would assure that the residential 24-hour impacts would be less than 1 ug/m<sup>3</sup>.

The Commission included a similar ambient monitoring program at the Los Esteros Critical Energy Project in San Jose. Based on the data collected at that site, when appropriately monitored, this monitoring program provides a meaningful check as to the adequacy of a fugitive dust control program. Staff believes a similar monitoring program at the SJVEC project site is warranted.

Staff believes that the construction air quality impacts will be less than significant with the implementation of the mitigation and compliance assurance measures contained in the recommended Conditions of Certification.

It is the Applicant's contention that staff's fugitive dust requirements are unnecessary considering the District's fugitive dust rules and regulations, which are incorporated as Conditions of Certification **AQ-111** through **AQ-117**. However, this fails to understand the fundamental principle that the Energy Commission is the responsible agency for this project and in that capacity the CEC has both final approval authority and impact mitigation compliance responsibility. The Applicant has assumed that they will be able to maintain a very high fugitive dust control efficiency (88 percent); and it is staff's contention that this control efficiency would not be met without both staff's recommended dust control requirements and staff's recommended compliance monitoring and demonstration provisions.

## **Operations Mitigation**

### **Applicant's Proposed Mitigation**

#### ***Emission Controls***

As discussed in the project description section, the Applicant proposes to employ dry low NO<sub>x</sub> (DLN) combustors, SCR with ammonia injection, an oxidation catalyst, air inlet filter cooler, lube oil vent coalescer, and operate exclusively on pipeline quality natural gas to limit turbine emission levels. The FDOC (SJVAPCD 2002b) provides the following BACT emission limits for each CTG:

- NO<sub>x</sub>: Emissions - 2.0 ppmvd at 15 percent O<sub>2</sub> (1-hour average, excluding startup/shutdown) and 14.27 lb/hr with no duct firing and 19.01 lb/hr with duct firing (1 hr rolling average)

- CO: Emissions - 4.0 ppmvd at 15 percent O<sub>2</sub> and 17.37 lb/hr with no duct firing and 23.14 lb/hr with duct firing (3-hr rolling average, excluding startup/shutdown)
- VOC: Emissions - 2.0 ppmvd at 15 percent O<sub>2</sub> and 3.48 lb/hr with no duct firing and 6.63 lb/hr with duct firing (3-hr rolling average, excluding startup/shutdown)
- PM<sub>10</sub>: Emissions – 9.0 lb/hr with no duct firing and 11.5 lb/hr with duct firing
- SO<sub>2</sub>: Emissions – 1.38 lb/hr with no duct firing and 1.84 lb/hr with duct firing
- NH<sub>3</sub>: Emissions - 10 ppmvd at 15 percent O<sub>2</sub> (1-hour rolling average) and 26.41 lb/hr with no duct firing and 35.19 lb/hr with duct firing

For the auxiliary boiler, the Applicant would employ low NO<sub>x</sub> burners, SCR with ammonia injection, an oxidation catalyst and operate exclusively on pipeline quality natural gas to limit the project's emission levels. The AFC (SJVEC 2001a, page 8.1-50), Data Adequacy Response (SJVEC 2001b, Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02), and FDOC (SJVAPCD 2002b) provide the following emission rates:

- NO<sub>x</sub>: Emissions - 9 ppmvd at 3 percent O<sub>2</sub> and 1.80 lb/hr
- CO: Emissions - 50 ppmvd at 3 percent O<sub>2</sub> and 6.20 lb/hr
- VOC: Emissions - 10 ppmvd at 3 percent O<sub>2</sub> and 0.69 lb/hr
- PM<sub>10</sub>: Emissions – 3.30 lb/hr
- SO<sub>2</sub>: Emissions – 0.11 lb/hr
- NH<sub>3</sub>: Emissions – 0.74 lb/hr

For the cooling tower, the Applicant has proposed a high efficiency drift eliminator to reduce the PM<sub>10</sub> emissions from the cooling tower. The drift rate for the drift eliminator will be limited to 0.0005 percent.

Additionally, the diesel fire pump and emergency generator must meet SJVAPCD BACT requirements. The Preliminary Determination of Compliance (SJVAPCD 2002a), and Data Adequacy Response (SJVEC 2001b, Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02), provides the following emissions control technology, or emission limits, or estimated emission rates:

#### Natural Gas Emergency IC Engines Driving Generators:

- NO<sub>x</sub>: Emissions – 2.63 lb/hr, and 0.78 g/hp-hr (grams per horsepower hour)
- CO: Emissions – 8.43 lb/hr, and 2.5 g/hp-hr
- VOC: Emissions – 1.42 lb/hr, and 0.42 g/hp-hr
- PM<sub>10</sub>: Emissions – 0.10 lb/hr, 0.01 lb/MMBtu, and natural gas fuel
- SO<sub>2</sub>: Emissions – 0.01 lb/hr, 0.0007 lb/MMBtu, and natural gas fuel.

#### Diesel Emergency IC Engines Driving Fire Pumps:

- NO<sub>x</sub>: Emissions – 3.89 lb/hr, and 5.89 g/hp-hr
- CO: Emissions – 2.35 lb/hr
- VOC: Emissions – 0.48 lb/hr
- PM<sub>10</sub>: Emissions – 0.17 lb/hr, and 0.25 g/hp-hr
- SO<sub>2</sub>: Emissions – 0.11 lb/hr
- SO<sub>2</sub>: Fuel sulfur content limit of 0.05 percent sulfur by weight.

### **Emission Offsets**

District Rule 2201 requires that the Applicant provide emission offsets, in the form of banked ERCs, for the project's emissions of NO<sub>x</sub>, VOC and PM<sub>10</sub>. For CEQA compliance, CEC staff recommends that all non-attainment pollutants and their precursors that do not require offsets by District regulation be mitigated at a minimum 1:1 ratio (i.e. for SJVEC such a pollutant is SO<sub>2</sub>). **AIR QUALITY Table 29** shows the Applicant's estimate of the emission liabilities that need to be mitigated. Detailed annual emissions information is provided in **AIR QUALITY Table 19**.

**AIR QUALITY Table 29**  
**SJVEC Annual Emission Liability (lb/year)**

	NO <sub>x</sub>	VOC	PM <sub>10</sub>	SO <sub>2</sub>	CO <sup>b</sup>
Emissions <sup>a</sup>	534,982	157,357	294,136	43,646	1,667,384
Offset Threshold	20,000	20,000	29,200	54,750	200,000
District Offset Liability	514,982	137,357	264,936	---	---
Applicants Offset Proposal	514,982	137,357	264,936	---	---

From Data Adequacy (SJVEC 2001b) Attachment 12-AQ-9, Table 8.1A-8, revised 3/21/02, CO Emissions Limits (SR 2002a), and FDOC (SJVAPCD 2002b).

Note(s):

a. Emissions from the diesel fire pump and emergency generator are exempt from requiring emissions offsets because they do not operate more than 200 hours per year for non-emergency purposes and are not used pursuant to voluntary arrangements with a power supplier to curtail power.

b. Emission offsets are not required for CO in attainment areas since the Applicant has demonstrated to the satisfaction of the Air Pollution Control Officer (APCO) that the AAQS are not violated in the areas to be affected, and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of the AAQS.

Emergency equipment that is used exclusively as emergency standby equipment for electrical power generation or any other emergency equipment as approved by the APCO that does not operate more than 200 hours per year for non-emergency purposes and is not pursuant to voluntary arrangements with a power supplier to curtail power, is exempt by District rules from providing emission offsets. With the exception of SO<sub>2</sub>, a minimum offset ratio of greater than 1:1 is proposed for all non-attainment pollutants and their precursors.

All air pollutant offsets provided for the project are estimated on a quarterly basis. The Applicant is proposing several sources of offsets to mitigate the project's potential emissions. Calculations of the required ERCs are based on the distance of the project from different sources of offsets. The District requires a 1.2:1 offsetting ratio for off-site ERCs within 15 miles. For areas outside of the 15 miles, ERCs must be provided at a ratio of 1.5:1. The District determines appropriate interpollutant offset ratios on a case-by-case basis.

As shown in **AIR QUALITY Table 30** through **AIR QUALITY Table 32**, the Applicant has demonstrated that they have purchased or have the rights to purchase ERCs in quantities that are sufficient to offset the project's NO<sub>x</sub>, PM<sub>10</sub>, and VOC emissions per District requirements. However, USEPA has challenged the validity of two of these ERC sources (USEPA 2002a, 2002b) and has noted that they do not accept the legality of the current District offset practices for pre-1990 emission reductions used for ozone mitigation under Clean Air Act law. Staff agrees with USEPA that pre-1990 ERCs are not included in an approved Air Quality Management Plan (AQMP), and do not meet the requirements to be accepted under federal law.

On September 19, 2002, the USEPA found that the SJVAPCD failed to submit an air quality attainment plan by the May 31, 2002 deadline. The District was required to submit an air quality plan that would bring the area into compliance with federal air quality standard by 2005. Currently, the SJVAPCD does not have an approved AQMP for ozone, and previous AQMPs were never completely approved by the USEPA (i.e., limited approval/limited disapproval). The issues relating to the use of pre-1990 ERCs, and issues relating to the appropriate requirements for permitting new major sources within the SJVAB, are further complicated by the fact that the District's ozone attainment status has been redesignated from serious to severe since the last ozone AQMP.

The PM<sub>10</sub> ERCs, as noted in EPA's comment letter on the Pastoria project Preliminary Determination of Compliance (PDOC) (USEPA 2000), should be from post-1993 emission reductions. Staff does not believe that the District has met the requirements to allow pre-1993 PM<sub>10</sub> credit use.

Finally, the District's regulations (Rule 2201 Section 4.13.1) state that "Major Source shutdowns or permanent curtailments in production or operating hours of a Major Source may not be used as offsets for emissions from a Major Source or a Title I modification, unless the ERC, or the emissions from which the ERC are derived, has been included in an EPA-approved attainment plan." The District does not have EPA-approved attainment plans for ozone or PM<sub>10</sub>; therefore, the use of major source shutdowns would not comply with District regulations.

### **NO<sub>x</sub> Emission Offsets**

**AIR QUALITY Table 30** provides a summary of the total project NO<sub>x</sub> emissions and identifies the project offset sources. ERC S-1340-2 was generated from converting steam generators to gas fired and adding flue gas recirculation (FGR) in 1993. ERC S-1280-2 was generated from the shutdown of a gas turbine engine in 1995. ERC N-272-2 was generated from the shutdown of emissions units in 1996. ERC S-1554-2 was generated from the retrofit of 31 IC Engines with pre-combustion chambers, prior to 1990, and the split and transfer from certificate S-1478-2.

**AIR QUALITY Table 30**  
**NO<sub>x</sub> Offsets Available for the San Joaquin Valley Energy Center**

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
Heavy oil western, Taft oilfield	ERCs	S-1340-2	45,681	47,927	46,196	44,813

<b>18405 Hwy 33, McKittrick</b>	ERCs	S-1280-2	20,238	17,410	19,037	19,604
<b>18800 South Spreckels Rd.</b>	ERCs	N-272-2	308	36,838	15,649	308
<b>Elk Hills Gas Plt, Kern County <sup>a</sup></b>	ERCs	S-1554-2	126,892	90,944	112,237	128,394
<b>Total ERCs Provided</b>	---	---	<b>193,119</b>	<b>193,119</b>	<b>193,119</b>	<b>193,119</b>
<b>Total Offsets Provided @1.5:1</b>	---	---	<b>128,746</b>	<b>128,746</b>	<b>128,746</b>	<b>128,746</b>
<b>Total Required <sup>b</sup></b>	---	---	128,746	128,746	128,746	128,746
<b>Total Unadjusted Remaining*</b>	---	---	0	0	0	0

From Data Response, Set 2A (SJVEC 2002b) Attachment AQ-154a/b, and FDOC (SJVAPCD 2002b), Calpine (2002).

Note(s):

a. Certificate shared by Pastoria Project.

b. Total Required per Year = (Annual Emissions – Offset) / 4 Quarters = (534,982 - 20,000) / 4 =128,746.

\* A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

Shaded columns indicated ERCs that staff does not consider valid under CAA law and/or District Rules or previous project commitment.

The Applicant appears to be in compliance with the District's NO<sub>x</sub> offset requirements and is providing ERCs at a total offset ratio of greater than 1:1. However, USEPA disputes the validity of ERC certificate S-1554-2 (USEPA 2002a, 2002b) under Clean Air Act law. Staff concurs with EPA's position regarding pre-1990 ERCs. Additionally, the emission reductions for ERC certificates S-1280-2 and N-272-2 appear to be from the shutdown of major sources; therefore, those credits should not be allowed under current District rules (Rule 2201, Section 4.13.1). Therefore, the Applicant will have to secure other ERC sources to offset the project's NO<sub>x</sub> emissions. In addition, ERC S-1340-2 is already accounted as an ERC for the Pastoria Power Plant project and is specifically identified in the Commission's Decision for that project. Therefore, the Applicant must either secure additional ERCs to replace ERC S-1340-2, or formally document to the Commission and to the San Joaquin Valley Air Pollution Control District that it is no longer needed for the Pastoria Project

## PM<sub>10</sub> Emission Offsets

**AIR QUALITY Table 31** provides a summary of the total project PM<sub>10</sub> emissions and identifies the project offset sources. ERCs N-208-4 and C-449-4 were generated from the shutdown of entire stationary sources in 1996 and 1987, respectively. ERC C-347-4, C-448-4 and S-1693-4 were generated from the shutdown of emissions units in 1992, 1992, and 1987, respectively. ERC S-1577-4 was generated from the retrofit of screen baskets and cyclones with more efficient cyclones in 1994. ERC N-297-4 was generated from the retrofit of a cotton gin with 1D-3D cyclones in 1994. ERC S-1578-4 was generated from the replacement of screen baskets with cyclones in 1994. ERC C-447-4, S-1666-4, S-1682-4, S-1683-4, S-1684-4, S-1685-4, S-1686-4, S-1687-4, S-1688-4, S-1689-4, S-1690-4, S-1691-4, and S-1692-4 were generated from the shutdown of cotton gins in 2000, 1997, 1999, 1990, 1992, 1999, 1999, 1995, 1997, 1992, 1992, unknown shutdown date, and 1994, respectively.

### AIR QUALITY Table 31

#### PM<sub>10</sub> Offsets Available for the San Joaquin Valley Energy Center

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
<b>18800 South Spreckels Road, Manteca</b>	ERCs	N-208-4	715	8,177	6,581	715

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
2907 S. Maple Avenue, Fresno	ERCs	C-347-4	50,845	67,976	8,408	42,056
12490 Garzoli, McFarland	ERCs	S-1577-4	489	0	0	23,085
12021 Avenue 328, Visalia	ERCs	S-1578-4	421	0	176	46,954
526 Mettler Frontage Road East, Mettler	ERCs	S-1666-4	0	0	0	18,238
217 W. Terra Bella Avenue, Pixley	ERCs	S-1682-4	1,340	0	0	0
Mesa Gin, near Lost Hills	ERCs	S-1683-4	0	0	0	1,462
18281 Beech Street, Shafter	ERCs	S-1684-4	0	0	0	11,843
12838 Wible Road, Bakersfield	ERCs	S-1685-4	2,953	0	0	8,168
12838 Wible Road, Bakersfield	ERCs	S-1686-4	87	0	721	10,072
2800 Renfro Road, Bakersfield	ERCs	S-1687-4	0	0	610	0
12112 Copus Road, Bakersfield	ERCs	S-1688-4	0	0	0	2,736
16351 Avenue 40, Earlimart	ERCs	S-1689-4	0	0	0	2,604
Weedpatch Hwy / Wheeler Ridger Road	ERCs	S-1690-4	0	0	0	1,830
3 miles North of Twisselman on Hwy 33	ERCs	S-1691-4	0	0	0	856
9213 Old River Road, Bakersfield	ERCs	S-1692-4	0	0	987	14,019
27/29S/27E	ERCs	S-1693-4	1,091	1,103	1,115	1,115
7870 W. Hutchins Road, Dos Palos	ERCs	N-297-4	0	0	101	66,394
5391 W. Lincoln	ERCs	C-447-4	0	0	0	7,953
3570 W. Ashlan Avenue, Fresno	ERCs	C-448-4	1,067	1,067	1,067	1,067
525 W. Third Street, Hanford	ERCs	C-449-4	82	28	373	674
<b>Total ERCs Provided</b>	---	---	<b>59,090</b>	<b>78,351</b>	<b>20,139</b>	<b>261,841</b>
<b>Total Offsets Provided @ 1.5:1</b>	---	---	<b>39,393</b>	<b>52,234</b>	<b>13,426</b>	<b>174,561</b>
<b>Total Required *</b>	---	---	66,234	66,234	66,234	66,234
<b>Difference</b>	---	---	-26,841	-14,000	-52,808	108,327
<b>Distribute Q4 to Q3, Q2 and Q1</b>	---	---	<b>26,841</b>	<b>14,000</b>	<b>52,808</b>	<b>-93,649</b>
<b>Total Unadjusted Remaining</b>	---	---	<b>0</b>	<b>0</b>	<b>0</b>	<b>14,678</b>
<b>ERC Balance Remaining * (adjusted for 1.5:1 ratio)</b>	---	---	<b>0</b>	<b>0</b>	<b>0</b>	<b>22,017</b>

From Data Response, Set 2A (SJVEC 2002b) Attachment AQ-154a/b, and FDOC (SJVAPCD 2002b).

Note(s):

a. Total Required per Year = (Annual Emissions – Offset) / 4 Quarters = (294,136 - 29,200) / 4 = 66,234.

\* A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

Shaded columns indicated ERCs that staff does not consider valid under CAA law and/or District Rules.

Pursuant to Section 4.13.7 of the SJVAPCD, actual emissions reductions for PM that occurred from October through March (Q4 to Q1) may be used to offset increases in PM during any period of the year. Worst-case ambient PM conditions occur during winter and fall (Q4 to Q1). To further encourage the production of ERC credits in Q4 and Q1, the SJVAPCD allows these credits to be applied to any period of the year. For the SJVEC, surplus PM<sub>10</sub> credits from the 4<sup>th</sup> quarter (Q4) are therefore applied to the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> quarters (Q1, Q2, and Q3). Thus, the Applicant appears to be in compliance with the District's PM<sub>10</sub> offset requirements and is providing ERCs at a total offset ratio of greater than 1:1. However, after a review of the emission reduction dates for these certificates staff has found that eight of the certificates (C-347-4, C-448-4, C-

449-4, S-1683-4, S-1684-4, S-1689-4, S-1690-4, and S-1693-4) were generated prior to 1993. Additionally, C-347-4 also appears to be from the shutdown of sources at a major source. Staff believes that these ERCs should not be allowed under CAA law, and without these pre-1993 ERCs the project's proposed PM<sub>10</sub> mitigation covers only 52 percent of the offset burden. Therefore, the Applicant will have to secure other ERC sources to offset the project's PM<sub>10</sub> emissions.

## VOC Emission Offsets

**AIR QUALITY Table 32** provides a summary of the total project VOC emissions and identifies the project offset sources. ERC C-348-1 and N-303-1 were generated from the shutdown of emissions units during 1992 and 1998, respectively (SJVEC 2002c). ERC S-1665-1 was generated from equipment modifications and shutdowns during 1993 (SJVEC 2002c). The VOC offset package was revised by Calpine in their offset reconciliation letter of December 5, 2002 (Calpine 2002). This recent modification notes the substitution of N-303-1 for the previously identified S-1425-1 and S-1549-1.

**AIR QUALITY Table 32**  
**VOC Offsets Available for the San Joaquin Valley Energy Center**

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
2907 S. Maple Avenue, Fresno	ERCs	C-348-1	30,485	30,519	30,470	30,501
757 11 <sup>th</sup> St, Tracy	ERCs	N-303-1	53,352	43,607	47,208	38,670
South Coles Levee Gas Plant	ERCs	S-1665-1	8,440	8,546	8,621	8,621
<b>Total ERCs Provided</b>	---	---	<b>92,277</b>	<b>82,672</b>	<b>86,299</b>	<b>77,792</b>
<b>Total Offsets Provided @ 1.5:1</b>	---	---	<b>61,518</b>	<b>55,115</b>	<b>57,533</b>	<b>51,861</b>
<b>Total Required <sup>a</sup></b>	---	---	<b>34,339</b>	<b>34,339</b>	<b>34,339</b>	<b>34,339</b>
<b>Total Unadjusted Remaining</b>	---	---	<b>27,179</b>	<b>20,776</b>	<b>23,194</b>	<b>17,522</b>
<b>Balance Remaining (adjusted for 1.5:1 ratio)</b>	---	---	<b>40,769</b>	<b>31,164</b>	<b>34,791</b>	<b>26,283</b>

From Data Response, Set 2A (SJVEC 2002b) Attachment AQ-154a/b, and FDOC (SJVAPCD 2002b), (Calpine 2002).

Note(s):

a. Total Required per Year = (Annual Emissions – Offset) / 4 Quarters = (157,357 - 20,000) / 4 = 34,339.

\* A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

Shaded columns indicated ERCs that staff does not consider valid under District Rules.

The Applicant is in compliance with the District's VOC offset requirements and is providing ERCs at a total offset ratio of greater than 1:1. However, ERCs C-348-1 and N-303-1 were created from the shutdown of major sources, which by District rule should preclude their use. Therefore, the Applicant will have to secure other ERC sources to offset the project's VOC emissions.

## SO<sub>2</sub> Emission Offsets

SO<sub>2</sub> emission offsets are not required by District Rule 2201 for this project, and the Applicant is not proposing to provide SO<sub>2</sub> emission offsets. However, SO<sub>2</sub> emissions are a precursor to PM<sub>10</sub>, which is a nonattainment pollutant at the project site area. As part of the CEQA evaluation, the CEC staff recommends that all non-attainment

pollutants and their precursors that do not require offsets by District regulation be mitigated at a minimum 1:1 ratio.

### **Adequacy of Proposed Mitigation**

With reservations regarding the 10 ppm HRSG ammonia concentration limit, staff concurs with the District's determination that the project's proposed emission controls/emission levels meets BACT requirements.

USEPA has brought to the attention of CEC staff issues relating to the validity of the ERCs being granted by the SJVAPCD. In their letter to the District dated May 6, 2002 the USEPA questions the validity of NO<sub>x</sub> certificate S-1554-2 based on being from a pre-1990 emission reduction. EPA later provided comments to the CEC on the project's Final Determination of Compliance (FDOC) outlining their position (USEPA 2002b) that pre-1990 NO<sub>x</sub> and VOC ERCs are not valid under CAA law within the SJVAB. The ERC in question constitutes a large fraction of the proposed offset package for NO<sub>x</sub>, and the project is not fully mitigated without these ERCs. Additionally, there are four separate credits (NO<sub>x</sub> Credits S-1280-2 and N-272-2, and VOC credits C-348-1 and N-303-1) that appear to have been created from the shutdown of major sources, which are not allowed to be used under District Rule 2201 Section 4.13.1. Also, there are eight separate PM<sub>10</sub> ERCs that are from pre-1993 emissions reductions, which are noted by the EPA in their Pastoria Energy Center PDOC comment letter (USEPA 2000) to be invalid under CAA law within the SJVAB. Finally, certificate ERC S-1340-2 is already accounted as an ERC for the Pastoria Energy Center. As such, staff believes it is precluded from being legitimately identified as an ERC for the SJVEC project until and unless the Applicant formally documents that ERC S-1340-2 is no longer needed for the Pastoria Power Project. Therefore, staff does not consider the offset package as identified by the Applicant adequate.

The District does not require offsets for the project's SO<sub>2</sub> emissions, and the Applicant is not proposing to offset these emissions. Staff believes that it is necessary to fully mitigate all non-attainment pollutants and their precursors at a minimum offset ratio of 1:1, resulting in a project liability of about 21.8 tons per year of SO<sub>2</sub>. It is the Applicant's contention that the SO<sub>2</sub> impacts from the project are mitigated by the NO<sub>x</sub>, and PM<sub>10</sub> emission reduction credits required to offset the project's NO<sub>x</sub> and PM<sub>10</sub> emissions (SR 2002b). However, the SJVEC would produce ammonia emissions at a fairly high rate, totaling more than 400 tons per year at an emission rate of 10 ppm. Because ammonia emissions have a direct role in converting SO<sub>x</sub> emissions to secondary PM<sub>10</sub>, staff believes it is necessary to directly mitigate the project's SO<sub>2</sub> emissions with emission reductions at a minimum ratio of 1:1. CEC staff is aware that SO<sub>2</sub> ERCs are available to the Applicant, thus SO<sub>2</sub> impacts can be fully mitigated by providing the required SO<sub>2</sub> ERCs. Further, staff has verbally proposed a compromise to the Applicant that they amend the Pastoria project decision and FDOC by recalculating SO<sub>2</sub> emissions using the lower fuel sulfur levels assumed for other projects, such as that assumed for SJVEC, which would avoid the need for District required offsets. Assuming a minimum 1:1 SO<sub>2</sub> offset ratio will be applied for both projects as secondary PM<sub>10</sub> mitigation, the Applicant would save a total of approximately 25 to 30 tons per year of SO<sub>2</sub> ERCs that would otherwise be required for the Pastoria Project.

### **Staff Proposed Mitigation**

Staff is proposing that the Applicant obtain valid post-1990 ERCs for NO<sub>x</sub> and VOC, obtain valid post-1993 ERCs for PM<sub>10</sub>, that the project's SO<sub>2</sub> emissions be mitigated with emissions reductions at a 1:1 ratio, and that the project's ERCs be specifically committed by condition for project use. Staff is recommending that a specific condition specifying the exact offset package is necessary because the Applicant has previously proposed offsets for a licensed project (Pastoria Energy Center) that have appeared in other projects. One NO<sub>x</sub> credit (S-1340-2) that is currently proposed for use on the SJVEC is already identified as an ERC for the Pastoria Energy Center Project (see Commission Decision, dated December 21, 2000, p.105). The Commission's expectation on the Pastoria Project is that offsets specifically identified in that Decision are to be used for that project and only that project. To the best of staff's knowledge, the applicant has not previously notified the SJVAPCD or the CEC staff of a change to the Pastoria offset package. However, a correspondence dated December 5, 2002 includes a revised offset package for both SJVEC and Pastoria. That correspondence was not copied to the SJVAPCD, so it is staff's belief that the Applicant still has not officially notified the district of the change to the offset proposal on Pastoria. A second ERC identified by the applicant as a Pastoria offset and included in the Commission Decision was also sold to another applicant (Turlock Irrigation District) who is proposing to use that ERC for their proposed power project (02-AFC-4). ERC S-0848-2, which was originally part of the Pastoria ERC package, was sold to TID and re-numbered S-1834-2.

To keep the record clear concerning the SJVEC offset package, staff recommends that the offset S-1340-2 not be used to offset or mitigate the SJVEC project. Until and unless the applicant formally documents that it is no longer needed for the Pastoria Project, that ERC certificate remains officially committed to the Pastoria Project per the Commission Decision.

Staff recommends that the Commission require the applicant to specifically identify ERC certificate numbers and the quantities of reductions to be surrendered prior to licensing. If, prior to the surrender of the ERC certificates, which usually occurs at the commencement of operation, the applicant plans to surrender different ERC credits, then the applicant can submit an amendment to the CEC Compliance office and a revision to the offset package can be processed.

The limits and requirements of staff's recommended operations mitigation measures are provided in Staff's recommended draft Condition of Certification **AQ-C7** presented in the conclusion section of this document, **AQ-C8** and the District's Conditions of Certification **AQ-1** through **AQ-117**.

### **CUMULATIVE IMPACTS**

To evaluate the cumulative emission impacts of the San Joaquin Valley Energy Facility, District records were evaluated to determine other sources that may cumulatively impact the site area. The following criteria were used to identify other stationary emission sources located within six miles of the SJVEC site that may contribute to cumulative impacts:

- Sources that have received an Authority to Construct (ATC) permit and operation began after 1999.
- Sources that have received an Authority to Construct (ATC) permit but are not yet operational; or
- Sources that have submitted complete ATC applications to the District.

Emissions from existing projects operating prior to and during 1999 are reflected in the background ambient air quality data. Therefore, it was not necessary to include them in the cumulative impact analysis.

A review of District records indicates that there are no new permitted projects or proposed projects with any non-VOC emissions potential of greater than 5 tons per year being permitted within 6 miles of the project site (SJVEC 2001a, page 8.1G-1). These are the types of projects that would have the potential to contribute to cumulative impacts. While there are three other known large power plant projects, including GWF Henrietta, Avenal Combined Cycle, and GWF Hanford Peaker, all proposed within 40 miles of the SJVEC, no significant overlap of the emission plumes from these widely spaced projects would be expected. Therefore, no cumulative modeling analysis was required and no significant cumulative impacts are expected as a result of this project in combination with other known projects.

## ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is greater than 50 percent within a six-mile radius of the proposed SJVEC power plant (please refer to **Socioeconomics Figure 1** in this Staff Assessment), and Census 1990 information that shows the low-income population is less than 50 percent within the same radius. Based on the Air Quality analysis, staff has not identified potential unmitigated significant direct or cumulative impacts resulting from the construction or operation of the project, and therefore there are no Air Quality environmental justice issues related to this project.

The Air Quality analysis indicates that the construction and operation of the project would not have the potential to create significant ambient air quality impacts for NO<sub>2</sub>, CO or SO<sub>2</sub>. Staff is proposing that the construction PM<sub>10</sub> emissions be mitigated through the use of fugitive dust emission controls and tailpipe emission controls as outlined in staff Conditions of Certification **AQ-C1** through **AQ-C5**, and District Conditions of Certification **AQ-111** to **AQ-117**. With the implementation of these mitigation measures the construction PM<sub>10</sub> impacts are considered to be less than significant. Additionally, with the proposed use of BACT and emission reduction credits, including the staff proposed SO<sub>2</sub> offsets (in Condition of Certification AQ-7) to mitigate secondary PM<sub>10</sub> emissions, the operational PM<sub>10</sub> impacts are considered to be less than significant.

## COMPLIANCE WITH LORS

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The San Joaquin Valley Air Pollution Control District submitted a Final Determination of Compliance (FDOC) for the SJVEC project on September 26, 2002 (SJVAPCD 2002b). Compliance with all District Rules and Regulations was demonstrated, to the District's satisfaction in the FDOC. The District's FDOC conditions are presented in the Conditions of Certification.

## FEDERAL

The USEPA found that at least two of the ERCs proposed in the Applicant's original offset package (one of these was since substituted by the Applicant (Calpine 2002)) are not valid and do not meet the requirements of CAA law (USEPA 2002b). Staff has found that several other ERCs proposed in the Applicant's offset package either do not meet the requirements of CAA law and/or District regulations, and that one of the ERCs was previously committed to another project. Therefore, staff believes that the SJVEC project has not demonstrated compliance with all federal LORS. Staff has included a copy (Appendix B) of the EPA December 5, 2002 correspondence, which explains the non-compliance with Federal Clean Air Act requirements.

The United States Environmental Protection Agency notes that pre-1990 emission reduction credits to offset NO<sub>x</sub> or VOC emissions were not valid under Clean Air Act (CAA) law for projects within the San Joaquin Valley. A simplified summary of the USEPA's rationale for this assessment is as follows:

1. The use of pre-1990 emission reduction credits has specific statutory requirements, including the requirement that those emission reduction credits are adequately incorporated in attainment demonstrations and Rate of Progress (ROP) plans. The use of these credits are not strictly allowed by the CAA Amendments of 1990, but are allowed by interpretation by the EPA on a case-by-case determination assuming these statutory requirements are met.
2. The District does not have an approvable attainment demonstration or a complete, approved Rate of Progress (ROP) plan. In fact, the District's current plan is based on its former designation as a serious nonattainment area, and the new plan that was required upon redesignation to severe has not been submitted within the required timeline.
3. The District has been aware of this problem for quite some time as evidenced by EPA's comment letter on the Pastoria project (USEPA 2000) and has not taken the necessary steps outlined to correct the shortcomings in its attainment and ROP documentation to allow EPA to make the case-by-case determination that pre-1990 credits are valid for the SJVAB.

Staff agrees with USEPA that the use of these pre-1990 emission reduction credits cannot be considered adequate mitigation if these emissions are not included in an approved attainment plan; and that the use of these credits would create emissions that

are not accounted for attainment planning for the air basin. Therefore, staff agrees with the EPA that the pre-1990 emission reduction credits are not legal under CAA law<sup>1</sup>.

The EPA feels so strongly about this issue that they have used unprecedented language in their letter (p. 4) stating: "The District failed to fulfill its commitments, which we believe provides further reason for EPA to urge the Commission to deny the license for the Project."

The EPA has previously commented that pre-1993 PM<sub>10</sub> ERCs are not valid under the Clean Air Act (EPA 2000). Staff once again agrees that under the current regulatory and attainment plant conditions pre-1993 PM<sub>10</sub> ERCs are not legal under CAA law.

The PSD permit has not yet been completed. Therefore, it is possible that project emission limits, or other changes may be necessary to meet federal requirements, and these changes will not occur until after the completion of the CEC licensing process. To address the issue of this continuing permit process, and the potential for permit revision requests, staff has included Condition of Certification **AQ-C6**.

The EPA has several enforcement provisions available under the Clean Air Act Section 113 if it determines that the project is being constructed in violation of Clean Air Act requirements. The potential enforcement actions include;

1. Issuance of an order prohibiting construction
2. Issuance of an administrative penalty (up to \$27,500 per day in violation)
3. Commence a civil action for a permanent or temporary injunction or to access or recover a civil penalty (up to \$27,500 per day in violation)

## STATE

Staff agrees with USEPA that the use of the pre-1990 NO<sub>x</sub> and VOC emission reduction credits and pre-1993 PM<sub>10</sub> emission reduction credits cannot at this time be considered adequate mitigation; therefore, the use of these credits:

1. Would not conform with applicable Federal, State and San Joaquin Valley Air Pollution Control District air quality laws, ordinances, regulations and standards, as required by Title 20, California Code of Regulations, section 1744 (b);
2. Would not mitigate contributions to existing violations of those standards, as required by Title 20, California Code of Regulations, section 1742 (b); and,
3. Would not be adequate to lessen the potential impacts to a level of insignificance, as required by Title 20, California Code of Regulations, section 1744 (b)

Additionally, California State Health and Safety Code, Section 41700 requires that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerate number of persons or to the public, or which endanger the comfort, repose,

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<sup>1</sup> Section 25525 of the California Public Resources Code states that "In no event shall the Commission make any finding in conflict with applicable federal law or regulation."

health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.” Staff believes that the project has not demonstrated compliance with California State Health and Safety Code, Section 41700, as the air pollutant emissions from the project have not been adequately mitigated.

## **LOCAL**

The SJVAPCD is the lead agency for managing air quality and coordinating planning efforts within the Fresno County portion of the San Joaquin Valley Air Basin so that the ozone and PM<sub>10</sub> standards are attained in a timely fashion. The District is responsible for developing that portion of the State Implementation Plan (SIP), and the Air Quality Management Plan (AQMP), that deals with certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). The California Air Resources Board (CARB) is responsible for submitting the SIP to U.S. EPA.

Currently, neither the SJVAPCD's ozone nor PM<sub>10</sub> Air Quality Management Plans are approved by USEPA. The existing ozone AQMP is no longer valid as its timeline has expired. The ozone AQMP was for a serious non-attainment area, which due to the failure to achieve attainment, has since been redesignated as a severe non-attainment area. The original ozone AQMP called for the air basin to be in attainment of federal ozone standards by 2001, and failing that attainment goal required the District to submit a Severe Nonattainment ozone AQMP to EPA by May 31, 2002. The District did not make the required submittal date and is currently under an offset and federal highway funds sanction timeline to complete the revised AQMP within 18 and 24 months, respectively. The redesignation to severe nonattainment requires that the District provide the EPA a plan to achieve attainment by 2005. The District is in the process of preparing a revised ozone AQMP, which is anticipated to request that the air basin be further redesignated as an extreme non-attainment area. This redesignation would change the required attainment demonstration date in the AQMP to 2010. The PM<sub>10</sub> attainment plan that was submitted in 1997 did not provide a demonstration of attainment and was later withdrawn by the state. The EPA has set December 31, 2002 as the date that SJVAPCD must submit a new PM<sub>10</sub> attainment plan.

The SJVAPCD rules and regulations specify the emissions control and offset requirements for new sources such as the San Joaquin Valley Energy Center Facility. Best Available Control Technology (BACT) will be implemented, and emission reduction credits (ERCs), obtained by the Applicant and approved and certified by the SJVAPCD, will fully mitigate project's nonattainment pollutant (including precursors) emissions so that they would be consistent with the strategies and future emissions anticipated under the AQMP.

The compliance with local regulations is based in part on the FDOC (SJVAPCD 2002b) and in part based on comments provided by USEPA.

### **Rule 1080 – Stack Monitoring**

The compliance with this rule is provided for in the Conditions of Certification.

### **Rule 1081 – Source Sampling**

The compliance with this rule is provided for in the Conditions of Certification.

### **Rule 1100 – Equipment Breakdown**

The compliance with this rule is provided for in the Conditions of Certification.

### **Rule 2010 – Permits Required**

By the submission of an AFC and an Authority to Construct (ATC) application for the San Joaquin Valley Energy Center, the Applicant is complying with the requirements of the rule. The FDOC has been completed and the final permit will be issued if the CEC certifies this project.

### **Rule 2201 – New and Modified Stationary Source Review Rule**

#### **Section 4.1 – Best Available Control Technology**

As shown in the FDOC, the Applicant's control technology proposal meets the Best Available Control Technology requirements of this rule as interpreted by the SJVAPCD.

#### **Section 4.5 – Offsets**

As shown in the FDOC and as shown above, the Applicant's offset mitigation proposal, in terms of the types and quantities of ERCs proposed, meets the requirements of this rule as interpreted by the District. However, the specific ERCs being proposed by the Applicant are not acceptable per USEPA's determination (USEPA 2002b). Therefore, staff cannot make a positive compliance determination for this rule at this time without the Applicant revising the offset package and without the addition of staff Condition of Certification **AQ-C7**, which requires the Applicant to hold project committed ERCs until they are surrendered upon initial operation.

#### **Section 4.13 – Additional Offset Requirements**

Additionally, until the District has EPA-approved attainment plans for ozone and PM<sub>10</sub>, ERCs from the shutdown of major sources should not be allowed to offset this project under District rules (Rule 2201 Section 4.13.1). Staff has identified that at least five of the ERCs proposed for this project (C-348-1, N-303-1, S-1280-2, N-272-2, and C-347-4) appear to have been created from the shutdown of major sources.

### **Rule 2520 – Federally Mandated Operating Permits**

The rule generally requires that an affected source file for a Title V operating permit within 12 months of commencing operation. This requirement is provided as Condition of Certification **AQ-110**.

### **Rule 2540 – Acid Rain Program**

SJVEC will be required to file for a Title IV Acid Rain operating permit to comply with this regulation. This requirement is also provided as Condition of Certification **AQ-59** and staff is recommending in the verification for this condition that the Title IV permit and necessary pollutant allotments be obtained prior to the first firing of the turbines.

## **Rule 4001 – New Source Performance Standards**

The project's emission limits, which are listed in the proposed conditions of certification, are significantly lower than the limits required by the applicable New Source Performance Standard (Title 40, Code of Federal Regulations, Part 60, Chapter 1. Subpart GG).

## **Rule 4101 – Visible Emissions**

The use of pipeline quality natural gas, proper combustion techniques and the PM<sub>10</sub> BACT limits for the turbines, auxiliary boiler and emergency generator engine, and the use of CARB-certified diesel fuel or very low sulfur diesel fuel and oxidation catalyst (if technologically feasible) for the diesel firewater pump, will guarantee that the visible emissions are well less than No. 1 on the Ringelmann chart (20 percent opacity) for more than 3 minutes in any one hour.

## **Rule 4102 – Nuisance**

The use of pipeline quality natural gas, proper combustion techniques, and the ammonia slip limit of 10 ppm at 15 percent O<sub>2</sub> will ensure the project's emission will not in any way cause a public nuisance.

## **Rule 4201 – Particulate Matter Concentration**

The BACT PM<sub>10</sub> emission limits for the turbines, auxiliary boiler, emergency generator and firewater pump engines will ensure that their respective particulate matter emissions are well below this rule's emission limit of 0.1 gr/dscf of gas calculated to 12 percent carbon dioxide. The estimated turbine emissions are 0.0052 gr/dscf, with emissions for the auxiliary boiler, emergency generator and firewater pump engines expected to be from 3.5 to 7 times lower than the standard.

## **Rule 4202 – Particulate Matter Emission Rate**

Gas and liquid fuels are excluded from the definition of process weight. Therefore, Rule 4202 does not apply to the proposed units.

## **Rule 4301 – Fuel Burning Equipment**

The BACT emission limits for SO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>10</sub> for the HRSGs and auxiliary boiler will ensure that their respective emissions of air contaminants are well below the following limits established by this rule: 0.1 grain per dry standard cubic foot of gas calculated to 12 percent of carbon dioxide, 200 lb/hr of SO<sub>2</sub>, 140 lb/hr of NO<sub>x</sub>, and 10 lb/hr of combustion contaminants.

## **Rule 4351 – Boilers, Steam Generators, and Process Heaters – Reasonably Available Control Technology**

The BACT emission limits for NO<sub>x</sub> and CO for the HRSGs and auxiliary boiler will ensure compliance with this rule.

## **Rule 4701 – Stationary Internal Combustion Engines**

Since the emergency generator and the firewater pump engines proposed for this project will be limited to 200 hours per year, or less, of non-emergency operation, they are exempt from this rule.

### **Rule 4703 – Stationary Gas Turbines**

The Conditions of Certification taken from the FDOC include the required monitoring and record keeping requirements of this rule. The project's emission concentrations for NO<sub>x</sub> and CO are guaranteed to be below the rule limit requirements of 9 ppm and 200 ppm, respectively.

### **Rule 4801 – SO<sub>2</sub> Concentration**

The use of pipeline quality natural gas will guarantee that the emissions of sulfur compounds are no greater than 0.2 percent by volume calculated as SO<sub>2</sub> on a dry basis.

### **Rule 7012 – Hexavalent Chromium – Cooling Towers**

The project will not use hexavalent chromium containing compounds for treating the cooling tower water. The compliance with this rule is provided for in the Conditions of Certification.

### **Regulation VIII – Fugitive PM<sub>10</sub> Prohibitions**

Rule 8011 – General Requirements; Rule 8021 – Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities; Rule 8031 – Bulk Materials; Rule 8041 – Carryout and Trackout; Rule 8051 – Open Areas; Rule 8061 – Paved and Unpaved Roads; Rule 8071 – Unpaved Vehicle/Equipment Traffic Areas; Rule 8081 – Agricultural Sources

Staff proposed Condition of Certification **AQ-C2** requires that the project owner provide a Construction Mitigation Plan to be approved prior to construction and **AQ-C3** lists the required mitigation elements and requires compliance with all appropriate Regulation VIII rules. Additionally, proposed Conditions of Certification **AQ-111** to **AQ-117** require compliance with appropriate Regulation VIII rules.

## **FACILITY CLOSURE**

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The SJVEC has a planned life of 30 years or more. Eventually the SJVEC will close, as a result of the end of its useful life; through some unexpected situation such as a natural disaster or catastrophic facility breakdown; or if the facility became economically noncompetitive earlier than 30 years, forcing decommissioning. When the facility closes, all sources of air emissions would cease and thus all impacts associated with those emissions would no longer occur.

During the operating life of the facility, temporary facility closure may be required and permanent facility closure would eventually be required. Temporary closure constitutes an unexpected shutdown for a period exceeding the time required for normal maintenance (e.g., for overhaul or replacement of combustion turbines). Cause for temporary closure might include a disruption in the supply of natural gas or damage to the plant from an earthquake, fire, storm, or other event. Permanent closure constitutes a complete cessation in operations with no intent to restart operations, due to plant age, damage to the plant that is beyond repair, economic conditions, or other reasons.

The Permit to Operate, issued by the District, is required for operation of the facility and the Applicant must pay permit fees annually while it maintains the Permit to Operate. If the Applicant chooses to close the facility and not pay the permit fees, then the Permit to Operate would be cancelled. In that event, the project could not restart and operate unless the Applicant pays the fees to renew the Permit to Operate.

When permanent closure occurs and if it were decided to dismantle the project's equipment and structures, there would likely be fugitive dust emissions associated with this dismantling effort. A Facility Closure Plan shall be submitted to the Energy Commission Compliance Project Manager and should include the specific details regarding how the Applicant plans to demonstrate compliance with the District Rules (i.e. Regulation VIII requirements) regarding fugitive dust emission mitigation.

A detailed description of the closure requirements are provided in the General Conditions Including Compliance Monitoring and Closure Plan section of the Staff Assessment.

## **RESPONSE TO PUBLIC AND AGENCY COMMENTS**

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As noted previously, the USEPA has provided comments to the CEC regarding the SJVEC Project (USEPA 2002b). Staff concurs with the comments regarding the project's proposed offset package. No other written comments concerning air quality have been received from either the public or from any public agency.

## **CONCLUSIONS**

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Staff cannot currently recommend this project for certification because the project's emissions mitigation does not comply with federal or state law. The rationale for this decision, as discussed previously, is as follows:

1. The Applicant has not shown that they own, or have the rights to purchase, adequate emission reduction credits as required by federal CAA law to offset the project's emission impacts;
2. The Applicant is proposing the use of major source shutdown emission reductions in their offset package, which is not allowed under District Rule 2201 Section 4.13.1;
3. The offset package would not conform with California Code of Regulations, Section 1742 (b) or 1744 (b);
4. The Applicant is not proposing to offset its SO<sub>2</sub> emissions, which staff considers necessary to mitigate secondary particulate impacts.
5. The Applicant lacks adequate quantities of offsets for each of the following criteria pollutants: 386.2 tons of NO<sub>x</sub>, 86.0 tons of VOC and 87.4 of PM<sub>10</sub> (all based on a required 1.5:1 offset ratio), and 21.8 tons of SO<sub>2</sub> (based on a 1:1 mitigation ratio).

Staff also believes that it is imprudent to license a power plant that could be subject to severe enforcement action by the EPA as soon as it begins construction.

In order for staff to recommend this project for certification the following issue would have to be resolved:

The Applicant would need to provide a list of **post**-1990 NO<sub>x</sub> and VOC ERCs and **post**-1993 PM<sub>10</sub> ERCs owned by, or under appropriately binding purchase agreements, that would fully offset the project as provided below in Table AQ-C7-1, using appropriate distance offset ratios, or if necessary, appropriate interpollutant offset ratios. These ERCs cannot be from the shutdown of a major source. In other words, the ERCs must be federally enforceable.

Further, if the Applicant can meet the requirements as listed above, staff would recommend the inclusion of a Condition of Certification to require the Applicant to maintain specific approved emission reduction credits committed to the SJVEC project and require the Applicant to obtain approval to amend the list of project committed offset credits. This Condition of Certification is proposed as follows:

**AQ-C7** The project owner shall maintain emission reduction credits committed to the SJVEC project to offset the quarterly emissions provided in Table AQ-C7-1.

**TABLE AQ-C7-1 – SJVEC Emission Offset Requirements**

	Offset Requirements (lbs/quarter)			
Pollutant	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
NO <sub>x</sub>	128,746	128,746	128,746	128,746
VOC	34,378	34,378	34,378	34,378
PM <sub>10</sub>	66,234	66,234	66,234	66,234
SO <sub>2</sub>	10,908	10,908	10,908	10,908

Further, the project owner shall commit specific emission reduction credits, as provided in Table AQ-C7-2, as the offset package for the SJVEC project.

**Table AQ-C7-2 – SJVEC Project Committed ERCs**

ERC Source	SJVEC Project ERC credits (lbs/quarter)			
NO <sub>x</sub> Credits	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
ERC Number(s) (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)
<b>VOC Credits</b>				
S-1665-1	8,440	8,546	8,621	8,621
ERC Number(s) (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)
<b>PM<sub>10</sub> Credits</b>				
N-208-4	715	8,177	6,581	715
S-1557-4	489	0	0	23,085
S-1578-4	421	0	176	46,954
S-1666-4	0	0	0	18,238

S-1682-4	1,340	0	0	0
S-1685-4	2,953	0	0	8,168
S-1686-4	87	0	721	10,072
S-1687-4	0	0	610	0
S-1688-4	0	0	0	2,736
S-1691-4	0	0	0	856
S-1692-4	0	0	101	14,019
N-297-4	0	0	101	66,394
C-447-4	0	0	0	7,953
ERC Number(s) (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)
<b>SO2 Credits</b>				
ERC Number(s) (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)	Value (to be provided)

The project owner shall not use any of the ERCs identified in Table AQ-C7-2 for purposes other than offsetting the SJVEC project.

**Verification:** At least 60 days prior to commencing turbine first fire, the project owner shall surrender the identified ERCs and in the amounts shown in Table AQ-C7-2 to the District and provide documentation of that surrender to the CPM.

When completed this table would include the complete list of credits in the offset proposal for each of the listed pollutants.

As noted, staff **does not** recommend project certification until the above requirements necessary to mitigate identified project impacts and comply with applicable LORS are met by the applicant. However, for informational purposes only, **Air Quality Appendix A** is included to illustrate Conditions of Certification that would be proposed by staff at the time the above requirements are fulfilled. The conditions that would be proposed include CEC staff conditions addressing areas including construction impacts and ERC requirements, as well requirements of the District found in the FDOC. However, because the USEPA has notified the District of its concerns regarding the acceptability of certain proposed ERCs, the District may revise the FDOC. Therefore, staff would refer to the modified FDOC and its requirements when proposing final Conditions of Certification.

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SR (Sierra Research) SR 2002c. Letter to Mathew Trask CEC from Gary Rubinstein regarding "San Joaquin Valley Energy Center, 01-AFC-22" Dated August 9, 2002.

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**AIR QUALITY APPENDIX A**  
Conditions of Certification

## CONDITIONS OF CERTIFICATION

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### STAFF CONDITIONS

**AQ-C1.** The project owner shall fund all expenses for an on-site air quality construction mitigation manager (AQCMM) who shall be responsible for maintaining compliance with conditions AQ-C2 through AQ-C5 for the entire project site and linear facility construction. The on-site AQCMM shall have full access to areas of construction of the project site and linear facilities, and shall have the authority to appeal to the CPM to have the CPM stop any or all construction activities as warranted by applicable construction mitigation conditions. The on-site AQCMM shall have a current certification by the California Air Resources Board for Visible Emission Evaluation prior to the commencement of ground disturbance. The on-site AQCMM shall not be terminated without written consent of CPM.

**Verification:** At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM, for approval, the name, current ARB Visible Emission Evaluation certificate, and contact information for the on-site AQCMM.

**AQ-C2.** The project owner shall provide a construction mitigation plan (CMP), for approval, which shows the steps that will be taken, and reporting requirements, to ensure compliance with conditions AQ-C3 through AQ-C5.

**Verification:** At least 60 days prior to start any ground disturbance, the project owner shall submit to the CPM, for approval, the construction mitigation plan. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. Otherwise, the plan shall be deemed approved.

**AQ-C3.** The on-site AQCMM shall submit to the CPM, in the monthly compliance report (MCR), a construction mitigation report that demonstrates compliance with the following mitigation measures:

- a) All unpaved roads and disturbed areas in the project and linear construction sites shall be watered until sufficiently wet. The frequency of watering can be reduced or eliminated during periods of precipitation.
- b) No vehicle shall exceed 10 miles per hour within the construction site.
- c) The construction site entrances shall be posted with visible speed limit signs.
- d) All vehicle tires shall be washed or cleaned free of dirt prior to entering paved roadways.
- e) Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
- f) All entrances to the construction site shall be treated with dust soil stabilization compounds.

- g) No construction vehicles can enter the construction site unless through the treated entrance roadways.
- h) Construction areas adjacent to any paved roadway shall be provided with sandbags to prevent run-off to the roadway.
- i) All paved roads within the construction site shall be swept twice daily.
- j) At least the first 500 feet of any public roadway exiting from the construction site shall be swept twice daily.
- k) All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or be treated with appropriate dust suppressant compounds.
- l) All vehicles that are used to transport solid bulk material and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.
- m) All construction areas that may be disturbed shall be equipped with windbreaks at the windward sides prior to any ground disturbance. The windbreaks shall remain in place until the soil is stabilized or permanently covered with vegetation.
- n) Any construction activities that can cause fugitive dust in excess of the visible emission limits specified in Condition **AQ-C4** shall cease when the wind exceeds 25 miles per hour.
- o) All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.
- p) All large construction diesel engines, which have a rating of 100 hp or more, shall meet, at a minimum, the 1996 ARB or EPA certified standards for off-road equipment.
- q) All large construction diesel engines, which have a rating of 100 hp or more, shall be equipped with catalyzed diesel particulate filters (soot filters), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types.
- r) All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM that shows the engine meets the conditions AQ-C3(p) and AQ-C3(q) above.
- s) The construction mitigation measures shall include necessary fugitive dust control methods as required to maintain compliance with District Rules 8021 through 8081 (Conditions AQ-111 to AQ-117).

Observations of visual dust plumes, and/or a differential in the downwind minus upwind  $PM_{10}$  instrument results of  $5 \mu g/m^3$  or more would indicate that the existing mitigation measures are not resulting in effective mitigation. The CMM shall implement the following procedures for additional mitigation measures if the CMM determines that the existing mitigation measures are not resulting in effective mitigation:

- a) The CMM shall direct more aggressive application of the existing mitigation methods within 15 minutes of making such a determination.
- b) The CMM shall direct implementation of additional methods of dust suppression if step a) specified above, fails to result in adequate mitigation within 30 minutes of the

original determination.

- c) The CMM shall direct a temporary shutdown of the source of the emissions if step b) specified above fails to result in adequate mitigation within one) hour of the original determination. The activity shall not restart until one full hour after the shutdown. The owner/operator may appeal to the CPM any directive from the CMM to shutdown a source, provided that the shutdown shall go into effect within one hour of the original determination unless overruled by the CPM before that time.

**Verification:** In the MCR, the project owner shall provide the CPM a copy of the construction mitigation report and any diesel fuel purchased records, which clearly demonstrates compliance with condition **AQ-C3**.

**AQ-C4** No construction activities are allowed to cause visible emissions at or beyond the project site fenced property boundary. No construction activities are allowed to cause visible plumes that exceed 20 percent opacity at any location on the construction site. No construction activities are allowed to cause any visible plume in excess of 200 feet beyond the centerline of the construction of linear facilities, or cause visible plumes to occur within 100 feet upwind of any occupied structures.

**Verification:** The on-site AQCM shall conduct a visible emission evaluation at the construction site fence line, or 200 feet from the center of construction activities at the linear facility, or adjacent to occupied structures, each time he/she sees excessive fugitive dust from the construction or linear facility site. The records of the visible emission evaluations shall be maintained at the construction site and shall be provided to the CPM on the monthly construction report.

**AQ-C5** The project owner shall ensure that the AQCM prepares and directs implementation of an Ambient Air Monitoring Program (AAMP) to measure PM<sub>10</sub> emissions during excavation, earthmoving and grading activities. The project owner/operator shall submit the AAMP to the CPM for review and approval. The AAMP shall include, at a minimum, the following:

1. The use of real-time simultaneous upwind and downwind PM<sub>10</sub> monitoring instruments;
2. A description of the data to be collected;
3. A description of how the data collected will be used to assess the effectiveness of the mitigation measures implemented under the CMP, including assessing the potential need for monitoring multiple activities on site simultaneously;

**Verification:** The AAMP shall be included as part of the CMP required by Condition of Certification **AQ-C2**. Monitoring records, including monitoring data from all upwind and downwind monitors, hourly wind speed and wind direction, and records of dust suppression measures implemented, shall be maintained on-site throughout construction and shall be made available to the CPM upon request. A summary of the monitoring records and the dust suppression activities shall be included in each AAMP

submittal Any changes to the AAMP or associated protocols require approval from the CPM.

**AQ-C6** The project owner shall submit to the CPM for review and approval any modification proposed by either the project owner or issuing agency to any project air permit.

**Verification:** The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

**AQ-C7** ***This condition, in incomplete draft form, is provided in the conclusion section of the Air Quality Staff Assessment Addendum. This condition will be completed when the Applicant has provided an acceptable project emissions offset package which must be provided prior to project approval.***

**AQ-C8** The project owner shall submit to the CPM and APCO Quarterly Compliance Reports, no later than 30 days following the end of each calendar quarter, that include operational and emissions information as necessary to demonstrate compliance with Conditions **AQ-1** through **AQ-117**. The Quarterly Operational Report will specifically note or highlight incidences of noncompliance.

**Verification:** The project owner shall submit the Quarterly Operational Reports to the CPM and APCO no later than 30 days following the end of each calendar quarter.

## **DISTRICT FINAL DETERMINATION OF COMPLIANCE CONDITIONS**

SJVACPD Permit No. UNIT C-3959-1-0: 180 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF A SIEMENS-WESTINGHOUSE MODEL 501FD OR EQUIVALENT NATURAL GAS FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW NOX COMBUSTOR, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AN OXIDATION CATALYST, HEAT RECOVERY STEAM GENERATOR #1 (HRSG) WITH A 746 MMBTU/HR DUCT BURNER AND A 570 MW NOMINALLY RATED STEAM TURBINE SHARED WITH C-3959-2 AND C-3959-3.

SJVACPD Permit No. UNIT C-3959-2-0: 180 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #2 CONSISTING OF A SIEMENS-WESTINGHOUSE MODEL 501FD OR EQUIVALENT NATURAL GAS FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW NOX COMBUSTOR, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AN OXIDATION CATALYST, HEAT RECOVERY STEAM GENERATOR #2 (HRSG) WITH A 746 MMBTU/HR DUCT BURNER AND A 570 MW NOMINALLY RATED STEAM TURBINE SHARED WITH C-3959-1 AND C-3959-3.

SJVACPD Permit No. UNIT C-3959-3-0: 180 MW NOMINALLY RATED COMBINED-CYCLE POWER GENERATING SYSTEM #3 CONSISTING OF A SIEMENS-WESTINGHOUSE MODEL 501FD OR EQUIVALENT NATURAL GAS FIRED COMBUSTION TURBINE GENERATOR WITH DRY LOW NOX COMBUSTOR, A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM, AN OXIDATION CATALYST, HEAT RECOVERY STEAM GENERATOR #3 (HRSG) WITH A 746 MMBTU/HR DUCT BURNER AND A 570 MW NOMINALLY RATED STEAM TURBINE SHARED WITH C-3959-1 AND C-3959-2.

Conditions of Certification **AQ-1** through **AQ-59** apply per turbine/HRSG unit unless otherwise identified.

**AQ-1** The project owner shall obtain APCO and CPM approval for the use of any equivalent turbine not specifically approved by the Authority to Construct. Approval of an equivalent turbine shall only be made after the APCO's determination that the submitted design and performance data for the proposed turbine is equivalent to the approved turbine. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval, including specific design and performance data for equivalent turbines not specifically approved by the Authority to Construct, to the APCO and CPM at least 90 days prior to the installation of the turbines.

**AQ-2** The project owner's request for approval of an equivalent turbine shall include the following information: turbine manufacturer and model number, nominal megawatt (MW) rating, maximum heat input rating, and manufacturer's guaranteed emission concentrations. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval for equivalent turbines not specifically approved by the Authority to Construct to the APCO and CPM at least 90 days prior to the installation of the turbines.

**AQ-3** The project owner's request for approval of an equivalent turbine shall be submitted to the District and CPM at least 90 days prior to the planned installation date. The project owner shall also notify the District and CPM at least 30 days prior to the actual installation of the District and CPM approved equivalent turbine. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval for equivalent turbines not specifically approved by the Authority to Construct to the APCO and CPM at least 90 days prior to the installation of the turbines, and notify the District and CPM at least 30 days prior to the actual installation of the approved equivalent turbine.

**AQ-4** The owner of the San Joaquin Valley Energy Center (SJVEC) shall minimize the emissions from the gas turbine and heat recovery steam generator to the maximum extent possible during the commissioning period. Conditions **AQ-4** through **AQ-16** shall apply only during the commissioning period as defined below. Unless otherwise indicated, Conditions **AQ-17** through **AQ-59** and conditions **AQ-105** through **AQ-117** shall apply after the commissioning period has ended. [District Rule 2201]

**Verification:** The project owner shall provide in the monthly commissioning status report (see the verification for Condition AQ-10) information regarding the types and effectiveness of methods used to minimize commissioning period emissions.

**AQ-5** Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the SJVEC construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, auxiliary boiler, and associated electrical delivery systems. [District Rule 2201]

**Verification:** None.

**AQ-6** Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a gas turbine is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial performance testing and is available for commercial operation. [District Rule 2201]

**Verification:** None.

**AQ-7** At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the combustors of this unit shall be tuned to minimize emissions. [District Rule 2201]

**Verification:** The project owner shall provide combustor tuning information to demonstrate compliance with this condition, and that information shall be submitted to the CEC CPM as part of the monthly commissioning status report noted in the verification of Condition AQ-10.

**AQ-8** At the earliest feasible opportunity, in accordance with the recommendations of the equipment manufacturer and the construction contractor, the Selective Catalytic Reduction (SCR) system and the oxidation catalyst shall be installed, adjusted, and operated to minimize emissions from this unit. [District Rule 2201]

**Verification:** The project owner shall provide emission abatement system information (such as dates of catalyst installation and ammonia grid initial operation) to demonstrate compliance with this condition, and that information shall be submitted to the CEC CPM as part of the monthly commissioning status report noted in the verification of Condition AQ-10.

**AQ-9** Coincident with the steady-state operation of the SCR system and the oxidation catalyst, NO<sub>x</sub> and CO emissions from this unit shall comply with the limits specified in condition **AQ-32** and **AQ-33**. [District Rule 2201]

**Verification:** The project owner shall provide emissions data to demonstrate compliance with this condition, and that data shall be submitted to the CEC CPM as part of the monthly commissioning status report noted in the verification of Condition AQ-10.

**AQ-10** The project owner shall submit a plan to the District at least four weeks prior to the first firing of this unit, describing the procedures to be followed during the commissioning period. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not limited to, the tuning of the combustors, the installation and operation of the SCR systems and the oxidation catalyst, the installation, calibration, and testing of the NO<sub>x</sub> and CO continuous emissions monitors, and any activities requiring the firing of this unit without abatement by the SCR system or oxidation catalyst. [District Rule 2201]

**Verification:** The project owner shall submit a single commissioning plan to the District and the CPM at least four weeks prior to the first firing of any combustion turbine, describing in detail the procedures to be followed for each turbine. The project owner shall submit, commencing one month from the time of gas turbine first fire, a monthly commissioning status report throughout the duration of the commissioning phase that demonstrates compliance with the commissioning plan and demonstrates compliance with all other substantive requirements listed in Conditions **AQ-4** through **AQ-16**. The monthly commissioning status report shall be submitted to the CPM monthly within 10 days of the numeric calendar day of turbine first fire date.

**AQ-11** Emission rates from this unit, during the commissioning period, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 189 lb/hr or 2,268 lb/day; VOC (as methane) - 17 lb/hr or 204 lb/day; CO - 902 lb/hr or 4,620 lb/day; PM<sub>10</sub> - 276 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) - 44.2 lb/day. [District Rule 2201]

**Verification:** The project owner shall provide emissions data to demonstrate compliance with this condition, and that data shall be submitted to the CEC CPM as part of the monthly commissioning status report noted in the verification of Condition **AQ-10**.

**AQ-12** Only one of the turbine units C-3959-1, C3959-2, and C3959-3 shall be operated at any one time without abatement and only during commissioning. Combined emission rates from units C-3959-1, C-3959-2, and C-3959-3, during the commissioning period, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 349 lb/hr or 3,630.4 lb/day; VOC (as methane) - 49 lb/hr or 572 lb/day; CO - 2,706 lb/hr or 12,715.4 lb/day; PM<sub>10</sub> - 828 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) - 132.6 lb/day. [District Rule 2201]

**Verification:** The project owner shall provide emissions data to demonstrate compliance with this condition, and that data shall be submitted to the CEC CPM as part of the monthly commissioning status report noted in the verification of Condition **AQ-10**.

**AQ-13** During the commissioning period, the project owner shall demonstrate compliance with conditions **AQ-11** and **AQ-12** through the use of properly operated and maintained continuous emissions monitors and recorders as specified in conditions **AQ-23** and **AQ-24**. The monitored parameters for this unit shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation). [District Rule 2201]

**Verification:** The project owner shall provide CEM data to demonstrate compliance with conditions AQ-11 and AQ-12, and that data shall be submitted to the CEC CPM as part of the monthly commissioning phase status report noted in the verification of Condition AQ-10.

**AQ-14** The continuous monitors specified in conditions **AQ-23** and **AQ-24** shall be installed, calibrated, and operational prior to the first firing of this unit. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of NO<sub>x</sub> and CO emission concentrations. [District Rule 2201]

**Verification:** The project owner shall provide notification to the District and the CPM of the anticipated dates for installation, calibration and testing for the CEMS at least 10 days prior to installation. The project owner shall provide a report to the District and CPM for approval demonstrating compliance with CEMS calibration requirements prior to turbine first fire. The project owner shall provide ongoing calibration data in the monthly commissioning status reports (see verification of Condition **AQ-10**).

**AQ-15** The total number of firing hours of this unit without abatement of emissions by the SCR system and the oxidation catalyst shall not exceed 294 hours during the commissioning period. Such operation of this unit without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system and the oxidation catalyst in place. Upon completion of these activities, the project owner shall provide written notice to the District and the unused balance of the 294 firing hours without abatement shall expire. [District Rule 2201]

**Verification:** The project owner shall provide to the District and the CPM a reporting of the unused balance of the 294 firing hours without abatement for each turbine in the monthly commissioning status reports (see verification of Condition AQ-10).

**AQ-16** The total mass emissions of NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub> that are emitted during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition **AQ-38**. [District Rule 2201]

**Verification:** None.

**AQ-17** The project owner shall notify the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup not more than 60 days nor less than 30 days prior to such date, and the date of actual startup within 15 days after such date. [District Rule 4001]

**Verification:** The project owner shall notify the CPM and the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup, defined here as first turbine fire, not more than 60 days or less than 30 days prior to such date, and the date of actual startup within fifteen (15) days after such date.

**AQ-18** Selective catalytic reduction (SCR) system and oxidation catalyst shall serve the gas turbine engine. The project owner shall submit SCR and oxidation

catalyst design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]

**Verification:** The project owner shall submit SCR and oxidation catalyst design details to the District and the CPM 30 days prior to commencement of construction.

**AQ-19** The project owner shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]

**Verification:** The project owner shall provide copies of drawings of the continuous emissions monitor design, installation, and operations details to the District and the CPM at least 30 days prior to commencement of construction.

**AQ-20** The project owner shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits of this permit during times that the CEMS is not functioning properly. [District Rule 4703]

**Verification:** The project owner shall compile the required NO<sub>x</sub> control system and emissions data and submit the information to the CPM and the APCO in the Quarterly Operational Reports (**AQ-C8**).

**AQ-21** Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators. Visible emissions from lube oil vents shall not exhibit opacity of 5 percent or greater, except for up to three minutes in any hour. [District Rules 2201 and 4101]

**Verification:** The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission to verify the installation and proper operation of the lube oil vent mist eliminators.

**AQ-22** Heat recovery steam generator design shall provide space for additional selective catalytic reduction catalyst and oxidation catalyst if required to meet NO<sub>x</sub> and CO emission limits. [District Rule 2201]

**Verification:** The project owner shall submit SCR and oxidation catalyst design details that demonstrate compliance with this conditions to the APCO and the CPM 30 days prior to commencement of construction.

**AQ-23** The CTG shall be equipped with a continuous monitoring system to measure and record fuel consumption. [District Rules 2201, 4001]

**Verification:** The project owner shall make the site available for inspection of the hourly operation and fuel consumption measuring equipment and records by representatives of the District, CARB and the Commission.

**AQ-24** The HRSG shall be equipped with a continuous emission monitors (CEMs) for NO<sub>x</sub>, CO, and O<sub>2</sub>. Continuous emissions monitor(s) shall meet the requirements of 40 CFR part 60, Appendices B and F (for CO), and 40 CFR part 75 (for NO<sub>x</sub> and O<sub>2</sub>), and of the District-approved monitoring protocol, and shall be capable of monitoring emissions during normal operating conditions and

during startups and shutdowns, provided the CEM(s) pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 2201, 4001, and 4703]

**Verification:** The project owner shall provide a Continuous Emission Monitoring System (CEMS) protocol for approval by the CPM and the APCO at least 60 days prior to installation of the CEMS. The project owner shall make the site available for inspection of the CEMS by representatives of the District, CARB and the Commission.

**AQ-25** The project owner shall install and maintain equipment, facilities and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]

**Verification:** The project owner shall provide a Continuous Emission Monitoring System (CEMS) protocol for approval by the CPM and the APCO at least 60 days prior to installation of the CEMS. The project owner shall make the site available for inspection of the CEMS by representatives of the District, CARB and the Commission.

**AQ-26** Upon notice by the District that the facility's CEM system is not providing polling data, the project owner may continue to operate the facility without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]

**Verification:** The project owner shall provide required non-pollled CEM data to the District by a District-approved alternative method.

**AQ-27** The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]

**Verification:** Prior to construction of the turbine stacks the project owner shall provide to the CPM for approval detailed plan drawings of the turbine stacks that show the sampling ports and demonstrate compliance with the requirements of this condition. The project owner shall make the site available for inspection of the turbine stacks by representatives of the District, CARB and the Commission.

**AQ-28** The CTG shall be fired exclusively on natural gas with a sulfur content of no greater than 0.25 grain of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the fuel sulfur content data, as required to be compiled in Condition **AQ-45**, demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-29** During startup or shutdown, CTG exhaust emissions shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 80 lb/hr, VOC - 16 lb/hr, or CO - 902 lb/hr, based on three hour averages. [California Environmental Quality Act]

**Verification:** The project owner shall submit to the CPM and APCO the turbine startup and shutdown emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-30** Combined emission rates from units C-3959-1, C-3959-2, and C-3959-3, during startup or shutdown, shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) 118.02 lb/hr, VOC - 29.26 lb/hr, or CO - 948.28 lb/hr, based on three hour averages. [District Rules 2201 and 4102]

**Verification:** The project owner shall submit to the CPM and APCO the turbine startup and shutdown emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-31** Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmvd emission limits in condition **AQ-33**. Shutdown is defined as the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine. Startup and shutdown durations shall not exceed three hours and one hour, respectively, per occurrence. Startup and shutdown events shall not exceed 416 hours per calendar year. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the turbine startup and shutdown event duration data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-32** Emission rates from this unit (with duct burner firing), except during startup and shutdown periods, shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) 19.01 lb/hr and 2.0 ppmvd @ 15 percent O<sub>2</sub>; VOC (as methane) - 6.63 lb/hr and 2.0 ppmvd @ 15 percent O<sub>2</sub>; CO - 23.14 lb/hr and 4.0 ppmvd @ 15 percent O<sub>2</sub>; PM<sub>10</sub> - 11.5 lb/hr; or SO<sub>x</sub> (as SO<sub>2</sub>) - 1.84 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are one hour rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-33** Emission rates from this unit (without duct burner firing), except during startup and shutdown periods, shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 14.27 lb/hr and 2.0 ppmvd @ 15 percent O<sub>2</sub>; VOC (as methane) - 3.48 lb/hr and 1.4 ppmvd @ 15 percent O<sub>2</sub>; CO - 17.37 lb/hr and 4.0 ppmvd @ 15 percent O<sub>2</sub>; PM<sub>10</sub> - 9.0 lb/hr; or SO<sub>x</sub> (as SO<sub>2</sub>) - 1.38 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are one hour rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-34** Compliance with NO<sub>x</sub> emissions limitations specified in conditions **AQ-32** and **AQ-33** shall not be required during short-term excursions limited to a cumulative total of 10 hours per rolling 12-month period. Short-term excursions are defined as 15-minute periods designated by the project owner (and approved by the APCO) that are the direct results of transient load conditions, not to exceed four consecutive 15-minute periods, when the 15-minute average NO<sub>x</sub> concentration exceeds 2.0 ppmvd @ 15 percent O<sub>2</sub>. The maximum 1-hour average NO<sub>x</sub> concentration for periods that include short-term excursions shall not exceed 30 ppmvd @ 15 percent O<sub>2</sub>. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-35** Examples of transient load conditions include but are not limited to the following: (1) initiation/shutdown of combustion turbine inlet air cooling; (2) initiation/shutdown of combustion turbine steam injection for power augmentation; (3) rapid combustion turbine load changes; and (4) initiation/shutdown of HRSG duct burners. All emissions during short-term excursions shall accrue towards the hourly, daily and annual emissions limitations of this permit and shall be included in all calculations of hourly, daily and annual mass emission rates as required by this permit. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-36** Emissions from this unit, on days when a startup and/or shutdown occurs, shall not exceed the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 681.2 lb/day; VOC - 184.0 lb/day; CO - 4,047.7 lb/day; PM<sub>10</sub> - 276.0 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) - 44.2 lb/day. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-37** The ammonia (NH<sub>3</sub>) emissions shall not exceed 10 ppmvd @ 15 percent O<sub>2</sub> over a 24 hour rolling average. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-38** Annual emissions from the CTG, calculated on a 12 consecutive month rolling basis, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 176,524 lb/year; CO - 549,596 lb/year; VOC - 51,760 lb/year; PM<sub>10</sub> - 91,592 lb/year; or SO<sub>x</sub> (as SO<sub>2</sub>) - 14,436 lb/year. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO turbine emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**Verification:**

**AQ-39** Each one hour period shall commence on the hour. Each one hour period in a three hour rolling average will commence on the hour. The three hour average will be compiled from the three most recent one hour periods. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]

**Verification:** None.

**AQ-40** Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]

**Verification:** None.

**AQ-41** Compliance with the ammonia slip limit shall be demonstrated during all operating conditions, excluding startups and shutdowns, utilizing a continuous in-stack ammonia monitor acceptable to the District. As an alternative to using a continuous in-stack ammonia monitor, the project owner may submit a plan for an alternative method of demonstrating continuous compliance with the ammonia slip limit (except during startups and shutdowns) based on measurements of ammonia flow rate and/or other process parameters. At least 180 days prior to initial startup the project owner shall submit an ammonia monitoring plan for District review and approval. The plan shall indicate the method by which the project owner proposes to demonstrate compliance with the requirements of this condition. Upon approval by the District, the project owner shall implement the ammonia monitoring plan. [District Rule 4102]

**Verification:** The project owner shall provide an ammonia monitoring plan for approval by the CPM and the APCO at least 180 days prior to initial startup. If necessary, the project owner shall provide a Continuous Emission Monitoring System (CEMS) protocol for approval by the CPM and the APCO at least 60 days prior to installation of the ammonia CEMS.

**AQ-42** Source testing to measure startup NO<sub>x</sub>, CO, and VOC mass emission rates shall be conducted for one of the gas turbines (C-3959-1, C-3959-2, or C-3959-3) prior to the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. If CEM data is not certifiable to determine compliance with NO<sub>x</sub> and CO startup emission limits, then source testing to measure startup NO<sub>x</sub> and CO mass emission rates shall be conducted at least once every 12 months. [District Rule 1081]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-43** Source testing (with and without duct firing) to measure the NO<sub>x</sub>, CO, and VOC emission rates (lb/hr and ppmvd @ 15 percent O<sub>2</sub>) shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rules 1081 and 4703]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-44** Source testing (with and without duct firing) to measure the PM<sub>10</sub> emission rate (lb/hr) and the ammonia emission rate shall be conducted within 120 days after initial operation and at least once every twelve months thereafter. [District Rule 1081]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-45** Compliance with natural gas sulfur content limit shall be demonstrated within 60 days after the end of the commissioning period and weekly thereafter, except after demonstrating compliance with the fuel sulfur content limit for eight consecutive weeks for a fuel source, then the testing frequency shall not be less than quarterly. If a test shows noncompliance with the sulfur content requirement, the facility must return to weekly testing until eight consecutive weeks show compliance. [District Rules, 1081, 2540, and 4001]

**Verification:** The fuel sulfur content data shall be submitted to the CPM and the APCO in the Quarterly Operation Reports (AQ-11).

**Verification:**

**AQ-46** Compliance demonstration (source testing) shall be District witnessed, or authorized and samples shall be collected by a California Air Resources Board certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

**Verification:** The project owner shall notify the CPM and the District 30 days prior to any compliance source test. The project owner shall provide a source test plan to the CPM and District for approval 15 days prior to testing. The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-47** The following test methods shall be used: PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a, NO<sub>x</sub> - EPA Method 7E or 20, CO - EPA Method 10 or 10B, O<sub>2</sub> - EPA Method 3, 3A, or 20, VOC - EPA Method 18 or 25, ammonia - BAAQMD ST-1B, and fuel gas sulfur content - ASTM D3246. Alternative test methods as approved by the District may also be used to address

the source testing requirements of this permit. [District Rules 1081, 4001, and 4703]

**Verification:** The project owner shall provide a source test plan demonstrating compliance with this condition to the CPM and APCO for approval fifteen (15) days prior to testing.

**AQ-48** The project owner shall maintain the following records: date and time, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 2201 and 4703]

**Verification:** The project owner shall make the site available for inspection of records by representatives of the District, CARB and the Commission.

**AQ-49** The project owner shall maintain the following records: hours of operation, fuel consumption (scf/hr and scf/rolling twelve month period), continuous emission monitor measurements, calculated ammonia slip, and calculated NOx mass emission rates (lb/hr and lb/twelve month rolling period). [District Rules 2201 and 4703]

**Verification:** The project owner shall make the records available for inspection of records by representatives of the District, CARB and the Commission.

**AQ-50** Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]

**Verification:** None.

**AQ-51** Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

**Verification:** The project owner shall submit to the CPM and APCO the CEMS audits demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-52** The project owner shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]

**Verification:** The project owner shall submit to the CPM and APCO the CEMS audits demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-53** The project owner shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless

the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100, 6.1]

**Verification:** The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM and the APCO as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-54** The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100, 7.0]

**Verification:** The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-55** The project owner shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]

**Verification:** The project owner shall submit to the CPM and APCO the excess emissions and other data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-56** The project owner shall provide notification and record keeping as required under 40 CFR, Part 60, Subpart A, 60.7. [District Rule 4001]

**Verification:** The project owner shall comply with the notification and record keeping requirements specified under 40 CFR, Part 60, Subpart A, 60.7. The project owner shall make records available for inspection by representatives of the District, CARB and the Commission upon request.

**AQ-57** The project owner shall submit a semiannual report to the APCO listing any daily period during which the sulfur content of the fuel being fired in the gas turbine exceeded 0.8 percent by weight. [District Rule 4001]

**Verification:** The project owner shall submit to the CPM and APCO the sulfur content data as necessary to comply with this condition as part of every other Quarterly Operational Report (**AQ-C8**).

**AQ-58** All records required to be maintained by this permit shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request. [District Rule 2201]

**Verification:** The project owner shall make records available for inspection by representatives of the District, CARB and the Commission upon request.

**AQ-59** The project owner shall submit an application to comply with Rule 2540 - Acid Rain Program. [District Rule 2540]

**Verification:** The project owner shall submit to the CPM copies of the Title IV permit and proof that necessary Title IV SO<sub>2</sub> emission allotments have been acquired at least fifteen (15) days prior to the initial firing of the turbine(s).

**SJVACPD Permit No. UNIT C-3959-4-0: 227,163 GPM MECHANICAL/INDUCED DRAFT COOLING TOWER WITH 16 CELLS SERVED BY HIGH EFFICIENCY DRIFT ELIMINATOR.**

Conditions of Certification AQ-60 through AQ-65 apply to the cooling tower.

**AQ-60** The project owner shall submit cooling tower design details, including the cooling tower type, drift eliminator design details, and materials of construction to the District at least 90 days before the tower is operated. [District Rule 7012]

**Verification:** The project owner shall provide copies of cooling tower and drift eliminator design details to the CPM and the District for approval at least 30 days prior to construction of permanent foundations for the cooling tower.

**AQ-61** No hexavalent chromium containing compounds shall be added to cooling tower circulating water. [District Rule 7012]

**Verification:** The project owner shall provide the list of cooling tower water additives (i.e. biocides, fungicides, anti-scaling compounds, etc.) demonstrating compliance with this condition to the CPM for approval at least 30 days prior to operation of the cooling tower and shall provide any revisions to the cooling tower water additives list to the CPM for approval prior using the new water additive.

**AQ-62** Drift eliminator drift rate shall not exceed 0.0005 percent. [District Rule 2201]

**Verification:** The project owner shall provide copies of cooling tower and drift eliminator design details to the CPM and the District for approval at least 30 days prior to construction of permanent foundations for the cooling tower.

**AQ-63** PM<sub>10</sub> emission rate shall not exceed 25.9 lb/day. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the cooling tower emission data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-64** Compliance with the PM<sub>10</sub> daily emission limit shall demonstrated as follows: PM<sub>10</sub> lb/day = circulating water recirculation rate \* total dissolved solids concentration in the blowdown water \* design drift rate. [District Rule 2201]

**Verification:** None.

**AQ-65** Compliance with PM<sub>10</sub> emission limit shall be determined by blowdown water sample analysis by independent laboratory within 60 days of initial operation and quarterly thereafter. [District Rule 1081]

**Verification:** The results and field data collected from cooling tower blowdown water samples analysis shall be submitted to the CPM and the District as part of the Quarterly Operational Report (**AQ-C8**).

**SJVACPD Permit No. UNIT C-3959-5-0: 161 MMBTU/HR ABCO D-TYPE NATURAL GAS FIRED BOILER OR EQUIVALENT WITH COEN QUANTUM LOW NOX (QLN) BURNER OR EQUIVALENT WITH A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM AND AN OXIDATION CATALYST.**

**Conditions of Certification AQ-66 through AQ-90 apply to the auxiliary boiler.**

**AQ-66** The project owner shall obtain APCO approval for the use of any equivalent boiler or burner not specifically approved by this Authority to Construct. Approval of an equivalent boiler or burner shall only be made after the APCO's determination that the submitted design and performance data for the proposed boiler/burner is equivalent to the approved boiler/burner. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval, including specific design and performance data for equivalent boiler or burner not specifically approved by the Authority to Construct to the APCO and the CPM at least 90 days prior to the installation of the auxiliary boiler.

**AQ-67** The project owner's request for approval of an equivalent boiler or burner shall include the following information: boiler or burner manufacturer and model number, maximum heat input rating, manufacturer's guaranteed emission concentrations and a description of low-NO<sub>x</sub> operation. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval including specific design and performance data for equivalent boiler or burner not specifically approved by the Authority to Construct to the APCO and the CPM at least 90 days prior to the installation of the auxiliary boiler.

**AQ-68** The project owner's request for approval of an equivalent boiler or burner shall be submitted to the District at least 90 days prior to the planned installation date. The project owner shall also notify the District at least 30 days prior to the actual installation of the District approved equivalent boiler or burner. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval including specific design and performance data for equivalent boiler or burner not specifically approved by the Authority to Construct to the APCO and CPM at least 90 days prior to the planned installation of the auxiliary boiler, and notify the CPM and District at least 30 days prior to the actual installation of the approved equivalent boiler or burner.

**AQ-69** The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources

Board Air Monitoring Quality Assurance Volume VI, Standard Operating  
Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]

**Verification:** Prior to construction of the auxiliary boiler stack the project owner shall provide to the CPM for approval detailed plan drawings of the auxiliary boiler stack that show the sampling ports and demonstrate compliance with the requirements of this condition. The project owner shall make the site available for inspection of the auxiliary boiler stack by representatives of the District, CARB and the Commission.

**AQ-70** Ammonia injection grid shall be equipped with operational ammonia flow meter and injection pressure indicator. [District Rules 2201 and 4351]

**Verification:** The project owner shall make the site available for inspection of the ammonia flow meter and injection pressure indicator by representatives of the District, CARB and the Commission.

**AQ-71** The project owner shall monitor and record exhaust gas temperature at selective catalytic reduction catalyst and oxidation catalyst inlets. [District Rules 2201 and 4351]

**Verification:** The project owner shall make the site available for inspection of the exhaust gas temperature measuring equipment and temperature records by representatives of the District, CARB and the Commission.

**AQ-72** The boiler shall be fired exclusively on natural gas with a sulfur content of no greater than 0.25 grain of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the fuel sulfur content data, as required to be compiled in Condition **AQ-45**, demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-73** During startup or shutdown, boiler exhaust emissions shall not exceed either of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 10.0 lb/hr or CO - 12.5 lb/hr. [District Rules 2201 and 4102]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler startup and shutdown emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-74** Startup is defined as the period beginning with boiler initial firing until the unit meets the ppmvd emission limits in condition **AQ-75**. Shutdown is defined as the period beginning with initiation of boiler shutdown sequence and ending with cessation of firing of the boiler. Startup and shutdown durations shall not exceed one hour, each, per occurrence. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler startup and shutdown event duration data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-75** Emission rates from this unit, except during startup and shutdown periods, shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 9.0 ppmvd @ 3 percent O<sub>2</sub> or 0.0112 lb/MMBtu; VOC (as methane) - 10.0 ppmvd @ 3 percent

O<sub>2</sub>; CO - 50.0 ppmvd @ 3 percent O<sub>2</sub>; PM<sub>10</sub> - 0.0205 lb/MMBtu; or SO<sub>x</sub> (as SO<sub>2</sub>) - 0.0007 lb/MMBtu. All emission limits are three hour rolling averages. [District Rules 2201, 4305, and 4351]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-76** Ammonia (NH<sub>3</sub>) emissions shall not exceed 10 ppmvd @ 3 percent O<sub>2</sub> over a 24 hour rolling average. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-77** Emissions from this unit, on days when a startup and/or shutdown occurs, shall not exceed the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 43.3 lb/day; VOC - 16.6 lb/day; CO - 148.8 lb/day; PM<sub>10</sub> - 79.2 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) - 2.7 lb/day. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler emissions data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-78** Annual hours of operation shall not exceed 3,000 hours per calendar year. [District Rule 2201]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler operations data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-79** Source testing to measure startup NO<sub>x</sub> and CO mass emission rates shall be conducted upon initial operation and at least once every seven years thereafter. [District Rule 1081]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-80** Source testing to measure the NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and ammonia emissions rates shall be conducted within 60 days of initial operation and not less than once every 12 months thereafter, except after demonstrating compliance on two consecutive annual source tests, the unit shall be tested not less than once every thirty-six months. [District Rules 1081, 4305, and 4351]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-81** If the project owner fails any compliance demonstration for the NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and/or ammonia emission limits of this permit when testing not less than every 36 months, compliance with the NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and/or ammonia emission limits shall be demonstrated not less than once every 12 months for at least two successive successful tests. [District Rules 1081, 4305, and 4351]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-82** The following test methods shall be used: PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a, NO<sub>x</sub> (ppmv) - EPA Method 7E or ARB Method 100, NO<sub>x</sub> (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, VOC - EPA Method 18 or 25, ammonia - BAAQMD ST-1B, and fuel hhv - ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081, 4305, and 4351]

**Verification:** The project owner shall provide a source test plan demonstrating compliance with this condition to the CPM and APCO for approval fifteen (15) days prior to testing.

**AQ-83** The stack concentration of NO<sub>x</sub> (as NO<sub>2</sub>), CO, and O<sub>2</sub> shall be measured at least on a monthly basis using District approved portable analyzer. [District Rule 4305]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler portable analyzer concentration data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-84** The project owner shall maintain records of the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, the measured NO<sub>2</sub> and CO concentrations corrected to 3 percent O<sub>2</sub>, and the O<sub>2</sub> concentration. The records must also include a description of any corrective action taken to maintain the emissions within the acceptable range. These records shall be retained at the facility for a period of no less than 2 years and shall be made available for District inspection upon request. [District Rule 4305]

**Verification:** The project owner shall make the auxiliary portable analyzer concentration and corrective action records available for inspection by representatives of the District, CARB and the Commission upon request.

**AQ-85** If the NO<sub>x</sub> or CO concentrations, as measured by the portable analyzer, exceed the allowable emissions rate, the project owner shall notify the District and take corrective action within one (1) hour after detection. If the portable analyzer readings continue to exceed the allowable emissions rate, the project owner shall conduct an emissions test within 60 days, utilizing District-approved test methods, to demonstrate compliance with the applicable emissions limits. [District Rule 4305]

**Verification:** The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing.

**AQ-86** The portable analyzer shall be calibrated as recommended by the manufacturer. All instrument calibration data shall be kept on file including the date of calibration. The calibration date shall not exceed 6 months prior to the date the stack concentrations are measured and recorded. [District Rule 4305]

**Verification:** The project owner shall make portable analyzer manufacturer operating manuals and calibration records available for inspection by representatives of the District, CARB and the Commission upon request.

**AQ-87** Concentration measurements shall not be taken until the sample acquisition probe has been exposed to the stack gas for at least 150 percent of the response time. Measurements shall be taken in triplicate. [District Rule 4305]

**Verification:** The project owner shall submit to the CPM and APCO the auxiliary boiler portable analyzer concentration data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-88** If water vapor is not removed prior to measurement, the absolute humidity in the gas stream must be determined so that the gas concentrations may be reported on a dry basis. [District Rule 4305]

**Verification:** None.

**AQ-89** If water vapor creates an interference with the measurement of any component, then the water vapor must be removed from the gas stream prior to concentration measurements. [District Rule 4305]

**Verification:** None.

**AQ-90** Records of monthly natural gas hhv, natural gas consumption, and hours of operation shall be maintained and retained on site for a period at least two years and made available for District inspection upon request. [District Rules 2201 and 4351]

**Verification:** The project owner shall make the records that demonstrate compliance with this condition available for inspection by representatives of the District, CARB and the Commission upon request.

**SJVACPD Permit No. UNIT C-3959-6-0: 300 HP CUMMINS MODEL 6CTA8.3-FA DIESEL FIRED EMERGENCY IC ENGINE POWERING A FIRE PUMP.**

**Conditions of Certification AQ-91 through AQ-96 apply to the emergency fire pump engine.**

**AQ-91** The exhaust stack shall not be fitted with a rain cap, or any other similar device which would impede vertical exhaust flow. [District Rule 4102]

**Verification:** The project owner shall make the site available for inspection of the fire pump engine by representatives of the District, CARB and the Commission.

**AQ-92** The sulfur content of the diesel fuel used shall not exceed 0.05 percent by weight. [District Rule 2201]

**Verification:** The project owner shall make fuel purchase, MSDS or other fuel supplier records containing diesel fuel sulfur content available for inspection by representatives of the District, CARB and the Commission upon request.

**AQ-93** NO<sub>x</sub> emissions shall not exceed 5.89 g/hp-hr. [District Rule 2201]

**Verification:** The project owner shall provide to the CPM and APCO, 30 days prior to installation of the fire pump engine, manufacturer emissions guarantee data demonstrating compliance with this condition.

**AQ-94** PM<sub>10</sub> emissions shall not exceed 0.25 g/hp-hr. [District Rule 2201]

**Verification:** The project owner shall provide to the CPM and APCO, 30 days prior to installation of the fire pump engine, manufacturer emissions guarantee data demonstrating compliance with this condition.

**AQ-95** The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 0.75 hours per day or 100 hours per year. [District Rules 2201 and 4701]

**Verification:** The project owner shall submit to the CPM and APCO the fire pump engine operations data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-96** The project owner shall maintain records of hours of emergency and non-emergency operation. Records shall include the date, the number of hours of operation, the purpose of the operation (e.g., load testing, weekly testing, rolling blackout, general area power outage, etc.), and the sulfur content of the diesel fuel used. Such records shall be retained on site for a period of at least five years and made available for District inspection upon request. [District Rule 4701]

**Verification:** The project owner shall make the fire pump engine operating records available for inspection by representatives of the District, CARB and the Commission upon request.

SJVACPD Permit No. UNIT C-3959-7-0: 1,529 HP CUMMINS MODEL QSV81G OR EQUIVALENT LEAN BURN NATURAL GAS FIRED EMERGENCY IC ENGINE POWERING A 1,100 KW ELECTRICAL GENERATOR.

**Conditions of Certification AQ-97 through AQ-104 apply to the emergency generator engine.**

**AQ-97** The project owner shall obtain APCO approval for the use of any equivalent IC engine not specifically approved by this Authority to Construct. Approval of an equivalent IC engine shall only be made after the APCO's determination that the submitted design and performance data for the proposed IC engine is equivalent to the approved IC engine. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval including specific design and performance data for an equivalent emergency generator IC engine not specifically approved by the Authority to Construct to the APCO and the CPM at least 90 days prior to the installation of the emergency generator IC engine.

**AQ-98** The project owner's request for approval of an equivalent IC engine shall include the following information: IC engine manufacturer and model number, horsepower (hp) rating, exhaust stack information, and manufacturer's guaranteed emission concentrations. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval including specific design and performance data for an equivalent emergency generator IC engine not specifically approved by the Authority to Construct to the APCO and the CPM at least 90 days prior to the installation of the emergency generator IC engine.

**AQ-99** The project owner's request for approval of an equivalent IC engine shall be submitted to the District at least 90 days prior to the planned installation date. The project owner shall also notify the District at least 30 days prior to the actual installation of the District approved equivalent IC engine. [District Rule 2201]

**Verification:** The project owner shall submit a request for approval including specific design and performance data for an equivalent emergency generator IC engine not specifically approved by the Authority to Construct to the APCO and CPM at least 90 days prior to the installation of the emergency generator IC engine, and notify the District and CPM at least 30 days prior to the actual installation of the approved equivalent IC engine.

**AQ-100** The exhaust stack shall not be fitted with a rain cap, or any other similar device which would impede vertical exhaust flow. [District Rule 4102]

**Verification:** The project owner shall make the site available for inspection of the emergency generator IC engine by representatives of the District, CARB and the Commission.

**AQ-101** Emission rates from this unit shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 0.78 g/hp-hr; VOC (as methane) - 0.42 g/hp-hr; CO - 2.50 g/hp-hr; PM<sub>10</sub> - 0.01 lb/MMBtu; or SO<sub>x</sub> (as SO<sub>2</sub>) - 0.0007 lb/MMBtu. [District Rule 2201]

**Verification:** The project owner shall provide to the CPM and APCO, 30 days prior to installation of the emergency generator IC engine, manufacturer emissions guarantee data or other information demonstrating compliance with this condition.

**AQ-102** The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 1 hour per day or 200 hours per year. [District Rules 2201 and 4701]

**Verification:** The project owner shall submit to the CPM and APCO the emergency generator IC engine operations data demonstrating compliance with this condition as part of the Quarterly Operational Report (**AQ-C8**).

**AQ-103** The project owner shall maintain records of hours of emergency and non-emergency operation. Records shall include the date, the number of hours of operation, the purpose of the operation (e.g., load testing, weekly testing, rolling blackout, general area power outage, etc.), and the sulfur content of the diesel fuel used. Such records shall be retained on site for a period of at least five years and made available for District inspection upon request. [District Rule 4701]

**Verification:** The project owner shall make the emergency generator IC engine records available for inspection by representatives of the District, CARB and the Commission upon request.

Conditions of Certification AQ-104 through AQ-117 are SJVACPD General Facility Permit Conditions

**AQ-104** The project owner shall not begin actual onsite construction of the equipment authorized by this Authority to Construct until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act]

**Verification:** The project owner shall keep proof of the project's District air permit and CEC certification, including copies of all permit conditions and Conditions of Certification, onsite starting at the commencement of construction through the final decommissioning of the project. The project owner shall make the District's permit conditions and Conditions of Certification available at the project site to representatives of the District, California Air Resource Board (CARB) and the Energy Commission for inspection.

**AQ-105** Before initial operation of C-3959-1-0, C-3959-2-0, C-3959-3-0, C-3959-4-0, and C-3959-5-0, emission offsets shall be provided to offset the following increases in: PM<sub>10</sub> - Q1: 66,234 lb, Q2: 66,234 lb, Q3: 66,234 lb, and Q4: 66,234 lb; NO<sub>x</sub> (as NO<sub>2</sub>) - Q1: 128,746 lb, Q2: 128,746 lb, Q3: 128,746 lb, and Q4: 128,746 lb; VOC - Q1: 34,378 lb, Q2: 34,378 lb, Q3: 34,378 lb, and Q4: 34,378 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. [District Rule 2201]

**Verification:** The project owner shall submit copies of the surrendered ERC certificates to the CPM at least 30 days prior to first fire of the any combustion turbine at the SJVEC site.

**AQ-106** All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule]

**Verification:** The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

**AQ-107** No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

**Verification:** The project owner will document any complaints that it has received from the public in the Quarterly Operational Report (**AQ-C8**). The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

**AQ-108** Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Verification:** The project owner shall submit the results of the initial and annual source tests per Condition **AQ-42**.

**AQ-109** No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20 percent opacity. [District Rule 4101]

**Verification:** The project owner shall document any known opacity violations in the Quarterly Operational Report (**AQ-C8**). The project owner shall make the site available for inspection by representatives of the District, CARB and the Commission.

**AQ-110** The project owner shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

**Verification:** The project owner shall submit a copy of their Title V – Federal Mandated Operating Permit Application to the CPM within 12 months of commencing operation.

**AQ-111** Disturbances of soil related to any construction, demolition, excavation, extraction, and other earthmoving activities shall comply with the requirements for fugitive dust control in SJVUAPCD District Rule 8021 (11/15/01) unless specifically exempted under section 4.0 of Rule 8021. [District Rule 8021]

**Verification:** The project owner shall document compliance with Rule 8021 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-112** Outdoor handling, storage, and transport of any bulk material shall comply with the requirements of SJVUAPCD District Rule 8031 (11/15/01), unless specifically exempted under section 4.0 of Rule 8031. [District Rule 8031]

**Verification:** The project owner shall document compliance with Rule 8031 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-113** All sites that are subject to SJVUAPCD District Rule 8021, SJVUAPCD District Rule 8031, and SJVUAPCD District Rule 8071 shall comply with the requirements of SJVUAPCD District Rule 8041 (11/15/01), unless specifically exempted under section 4.0 of Rule 8041. [District Rule 8041]

**Verification:** The project owner shall document compliance with Rule 8041 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-114** Any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused or vacant for more than seven days shall comply with the requirements of SJVUAPCD District Rule 8051 (11/15/01), unless specifically exempted under section 4.0 of Rule 8051. [District Rule 8051]

**Verification:** The project owner shall document compliance with Rule 8051 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-115** Any new or existing public or private paved or unpaved road, road construction project, or road modification project shall implement the control measures and design criteria of, and comply with the requirements of SJVUAPCD District Rule 8061 (11/15/01) unless specifically exempted under section 4.0 of Rule 8061. [District Rule 8061]

**Verification:** The project owner shall document compliance with Rule 8061 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-116** Any unpaved vehicle/equipment traffic area of 1.0 acre or larger shall comply with the requirements of SJVUAPCD District Rule 8071 (11/15/01), unless specifically exempted under section 4.0 of Rule 8071. [District Rule 8071]

**Verification:** The project owner shall document compliance with Rule 8071 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AQ-117** Any off-field agricultural sources shall comply with the requirements of SJVUAPCD District Rule 8081 (11/15/01), unless specifically exempted under section 4.0 of Rule 8081. [District Rule 8081]

**Verification:** The project owner shall document compliance with Rule 8081 in the Monthly Compliance Report, and as necessary after construction is complete in the Quarterly Operational Report (**AQ-C8**).

**AIR QUALITY APPENDIX B**  
USEPA Comment Letter on the SJVEC FDOC

**December 18, 2002**

# **GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN**

Lance Shaw

## **INTRODUCTION**

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The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in compliance with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions;
- establish requirements for facility closure plans.
- specific conditions of certification that follow each technical area contain the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

## **GENERAL CONDITIONS OF CERTIFICATION**

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### **DEFINITIONS**

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

### **SITE MOBILIZATION**

Moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for construction utilities, installing utilities, grading for an access corridor, and other related

activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is, therefore, not considered construction.

## **GROUND DISTURBANCE**

Onsite activity that results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

## **GRADING**

Onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

## **CONSTRUCTION**

[From section 25105 of the Warren-Alquist Act.] Onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

- the installation of environmental monitoring equipment;
- a soil or geological investigation;
- a topographical survey;
- any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; or
- any work to provide access to the site for any of the purposes specified in a., b., c., or d.

## **START OF COMMERCIAL OPERATION**

For compliance monitoring purposes, “commercial operation” is that phase of project development which begins after the completion of start-up and commissioning, where the power plant has reached steady-state production of electricity with reliability at the rated capacity. For example, at the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

## **COMPLIANCE PROJECT MANAGER RESPONSIBILITIES**

A Compliance Project Manager (CPM) will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;

4. documenting and tracking compliance filings; and
5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval the approval will involve all appropriate staff and management.

The Energy Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Energy Commission about power plant construction or operation-related questions, complaints or concerns.

### **Pre-Construction and Pre-Operation Compliance Meeting**

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

### **Energy Commission Record**

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

- all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
- all monthly and annual compliance reports filed by the project owner;
- all complaints of noncompliance filed with the Energy Commission; and
- all petitions for project or condition changes and the resulting staff or Energy Commission action.

### **PROJECT OWNER RESPONSIBILITIES**

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general

compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate. A summary of the General Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section. The designation after each of the following summaries of the General Compliance Conditions (**Com-1**, **Com-2**, etc.) refers to the specific General Compliance Condition contained in **Compliance Table 1**.

### **Access, Compliance Condition of Certification-1 (COM-1)**

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

### **Compliance Record, COM-2**

The project owner shall maintain project files onsite or at an alternative site approved by the CPM, for the life of the project unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, all documents submitted as verification for conditions, and all other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files.

### **Compliance Verification Submittals, COM-3**

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

1. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
2. providing appropriate letters from delegate agencies verifying compliance;
3. Energy Commission staff audits of project records; and/or
4. Energy Commission staff inspections of mitigation or other evidence of mitigation.

Verification lead times (e.g., 90, 60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal.** The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

**Compliance Project Manager  
California Energy Commission  
1516 Ninth Street (MS-2000)  
Sacramento, CA 95814**

If the project owner desires Energy Commission staff action by a specific date, they shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

### **Pre-Construction Matrix and Tasks Prior to Start of Construction** **COM-4**

Prior to commencing construction a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's **first** compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be in the same format as the compliance matrix referenced above.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times (e.g., 30, 60, 90 days) for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

Project owners frequently anticipate starting project construction as soon as the project is certified. In those cases, it may be necessary for the project owner to file compliance submittals prior to project certification if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that the submittal of compliance documents prior to

project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change based upon the Final Decision

## COMPLIANCE REPORTING

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There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

### COMPLIANCE MATRIX, COM-5

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable;
7. the compliance status of each condition (e.g., "not started," "in progress" or "completed" (include the date); and

Satisfied conditions do not need to be included in the compliance matrix after they have been identified as satisfied in at least one monthly or annual compliance report.

### MONTHLY COMPLIANCE REPORT, COM-6

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the **Key Events List**. **The Key Events List Form is found at the end of this section.**

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports

shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as closed);
4. a list of conditions that have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a listing of the month's additions to the on-site compliance file;
10. any requests to dispose of items that are required to be maintained in the project owner's compliance file; and
11. a listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolutions of any results complaints, and the status of any unresolved complaints.

## **ANNUAL COMPLIANCE REPORT, COM-7**

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;
4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings made to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section]; and
10. a listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved complaints, and the status of any unresolved complaints.

## **CONSTRUCTION AND OPERATION SECURITY PLAN, COM-8**

Prior to commencing construction, a site-specific Security Plan for the construction phase shall be developed and maintained at the project site. At least sixty (60) days prior to the initial receipt of hazardous materials on-site, a site-specific Security Plan and Vulnerability Assessment for the operational phase shall be developed and maintained at the project site. The project owner shall notify the CPM in writing that the Plan is available for review and approval at the project site.

### **Construction Security Plan**

The Construction Security Plan must address:

1. site fencing enclosing the construction area;
2. use of security guards;
3. check-in procedure or tag system for construction personnel and visitors;
4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
5. evacuation procedures.

### **Operation Security Plan**

The Operations Security Plan must address:

1. permanent site fencing and security gate;
2. use of security guards;

3. security alarm for critical structures;
4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. evacuation procedures;
6. perimeter breach detectors and on-site motion detectors;
7. video or still camera monitoring system; and
8. fire alarm monitoring system.
9. site personnel background checks.
10. site access for vendors and requirements for Hazardous Materials vendors to conduct personnel background security checks.

In addition, the project owner shall prepare a Vulnerability Assessment and implement site security measures addressing hazardous materials storage and transportation consistent with US EPA and US Department of Justice guidelines.

The CPM may authorize modifications to these measures, or may require additional measures depending on circumstances unique to the facility, and in response to industry-related security concerns.

## **CONFIDENTIAL INFORMATION, COM-9**

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

## **DEPARTMENT OF FISH AND GAME FILING FEE, COM-10**

Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of \$850. The payment instrument shall be provided to the Energy Commission's Project Manager (PM), not the CPM, at the time of project certification and shall be made payable to the California Department of Fish and Game. The PM will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

## **REPORTING OF COMPLAINTS, NOTICES, AND CITATIONS, COM-11**

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with date and time stamp recording. All recorded inquiries shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:

[http://www.energy.ca.gov/sitingcases/power\\_plants\\_contacts.html](http://www.energy.ca.gov/sitingcases/power_plants_contacts.html)

Any changes to the telephone number shall be submitted immediately to the CPM who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

## **FACILITY CLOSURE**

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At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place, planned closure, unplanned temporary closure and unplanned permanent closure.

## **CLOSURE DEFINITIONS**

### **Planned Closure**

A planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

### **Unplanned Temporary Closure**

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

### **Unplanned Permanent Closure**

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner remains accountable for implementing the on-site contingency plan. It can also

include unplanned closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

## **GENERAL CONDITIONS FOR FACILITY CLOSURE**

### **Planned Closure, COM-12**

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities, until Energy Commission approval of the facility closure plan is obtained.

### **Unplanned Temporary Closure/On-Site Contingency Plan, COM-13**

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site

contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

### **Unplanned Permanent Closure/On-Site Contingency Plan, COM-14**

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

## **CBO DELEGATION AND AGENCY COOPERATION**

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In performing construction and operation monitoring of the project, Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Commission staff retains CBO authority when selecting a delegate CBO including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Commission staff may also seek the cooperation of state, regional and local agencies that have an interest in environmental control when conducting project monitoring.

## **ENFORCEMENT**

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The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider. Moreover, to ensure compliance with the terms and conditions of certification and applicable LORS, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

## **NONCOMPLIANCE COMPLAINT PROCEDURES**

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current

State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

### **Informal Dispute Resolution Procedure**

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

#### **Request for Informal Investigation**

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and within seven working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within 48 hours, followed by a written report filed within seven days.

#### **Request for Informal Meeting**

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the

project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and
4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et seq.

### **Formal Dispute Resolution Procedure-Complaints and Investigations**

If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Energy Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Cal. Code Regs., tit. 20, §§ 1232-1236).

### **POST CERTIFICATION CHANGES TO THE ENERGY COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES, COM-15**

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The project owner must petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Energy Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of change process applies are explained below.

## **AMENDMENT**

A proposed change will be processed as an amendment if it involves a change to the requirement or protocol, or in some cases the verification portion of a condition of certification, an ownership or operator change, or a potential significant environmental impact.

## **INSIGNIFICANT PROJECT CHANGE**

The proposed change will be processed as an insignificant project change if it does not require changing the language in a condition of certification, have a potential for significant environmental impact, nor cause the project to violate laws, ordinances, regulations or standards.

## **VERIFICATION CHANGE**

As provided in Title 20, Section 1770 (d), California Code of Regulations, a verification may be modified by staff without requesting an amendment to the decision if the change does not conflict with the conditions of certification.

## KEY EVENTS LIST, COM-6

PROJECT: San Joaquin Valley Energy Center Power Plant Project

DOCKET #: 01-AFC-22

COMPLIANCE PROJECT MANAGER: Lance Shaw

### EVENT DESCRIPTION

### DATE

Certification Date/Obtain Site Control	
Online Date	
<b>POWER PLANT SITE ACTIVITIES</b>	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
<b>TRANSMISSION LINE ACTIVITIES</b>	
Start T/L Construction	
<b>SYNCHRONIZATION WITH GRID AND INTERCONNECTION</b>	
<b>COMPLETE T/L CONSTRUCTION</b>	
<b>FUEL SUPPLY LINE ACTIVITIES</b>	
Start Gas Pipeline Construction and Interconnection	
<b>COMPLETE GAS PIPELINE CONSTRUCTION</b>	
<b>WATER SUPPLY LINE ACTIVITIES</b>	
<b>START WATER SUPPLY LINE CONSTRUCTION</b>	
<b>COMPLETE WATER SUPPLY LINE CONSTRUCTION</b>	

**TABLE 1**  
**COMPLIANCE SECTION**  
**SUMMARY of GENERAL CONDITIONS OF CERTIFICATION**

<b>CONDITION NUMBER</b>	<b>PAGE #</b>	<b>SUBJECT</b>	<b>DESCRIPTION</b>
COM-1	4	Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COM-2	4	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COM-3	4	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COM-4	5	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: <ul style="list-style-type: none"> <li>▪ property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns,</li> <li>▪ a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction,</li> <li>▪ all pre-construction conditions have been complied with,</li> <li>▪ the CPM has issued a letter to the project owner authorizing construction.</li> </ul>
COM-5	6	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COM-6	7	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.

<b>CONDITION NUMBER</b>	<b>PAGE #</b>	<b>SUBJECT</b>	<b>DESCRIPTION</b>
COM-7	7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COM-8	8	Security Plans	Prior to commencing construction, the project owner shall submit a Construction Security Plan. Prior to commencing operation, the project owner shall submit an Operation Security Plan.
COM-9	9	Confidential Information	Any information the project owner deems confidential shall be submitted to the Commission's Dockets Unit.
COM-10	9	Dept of Fish and Game Filing Fee	The project owner shall pay a filing fee of \$850 at the time of project certification.
COM-11	9	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COM-12	11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least twelve months prior to commencement of a planned closure.
COM-13	12	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COM-14	13	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COM-15	15	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

## COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: San Joaquin Valley Energy Center Power Project AFC Number: <b>01-AFC-22</b>
<b>COMPLAINT LOG NUMBER</b> _____ Complainant's name and address:   Phone number: _____
Date and time complaint received: Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):   
Findings of investigation by plant personnel:   Indicate if complaint relates to violation of Energy Commission requirement: Date complainant contacted to discuss findings: _____
Description of corrective measures taken or other complaint resolution:      Indicate if complainant agrees with proposed resolution: If not, explain:   Other relevant information:
If corrective action necessary, date completed: _____ Date first letter sent to complainant: _____ (copy attached) Date final letter sent to complainant: _____ (copy attached)
This information is certified to be correct. Plant Manager's Signature: _____ Date: _____

(Attach additional pages and supporting documentation, as required.)

# **VISUAL RESOURCES**

Testimony of Ken Peterson and Dale Edwards

## **INTRODUCTION**

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Visual resources are the natural and cultural features of the environment that can be viewed. This analysis focuses on whether the San Joaquin Valley Energy Center (SJVEC) would cause visual impacts and whether the project would be in compliance with applicable laws, ordinances, regulations, and standards (LORS). The determination of the potential for visual impacts resulting from the proposed project is required by the California Environmental Quality Act (CEQA).

## **ORGANIZATION OF ANALYSIS**

This analysis includes the following:

- Description of applicable laws, ordinances, regulations and standards;
- Assessment of the visual resources setting of the proposed power plant site and linear facility routes;
- Evaluation of the visual impacts of the proposed project on the existing setting;
- Evaluation of compliance of the project with applicable laws, ordinances, regulations, and standards;
- Identification of measures needed to mitigate any potential significant impacts and to achieve compliance with applicable laws, ordinances, regulations, and standards.
- Conclusions and Recommendations;
- Proposed Conditions of Certification

A summary of the visual resources analysis is presented in table form in Appendix VR-1. A lighting complaint resolution form is provided in Appendix VR-2. Appendix VR-3 presents the visual resources figures.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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### **FEDERAL**

The proposed project, including the linear facilities, is not located on federally administered public lands and is not subject to federal regulations pertaining to visual resources.

## STATE

None of the roadways in the project viewshed are eligible or designated State Scenic Highways, and no State scenic properties are nearby. Therefore, there are no State regulations pertaining to scenic resources applicable to the project.

## LOCAL

The proposed power plant site is located within the City of San Joaquin. The linear facilities associated with the project would be located within the City and the unincorporated area of the County of Fresno. Therefore, the project would be subject to local LORS pertaining to the protection and maintenance of visual resources. LORS applicable to the proposed project are found in the General Plans and Zoning Ordinances of the City of San Joaquin and Fresno County.

Applicable LORS in the City of San Joaquin Comprehensive General Plan regarding visual resources are found in Major Goals, Objectives and Policies and the Land Use Element. The City of San Joaquin Zoning Ordinance contains pertinent LORS related to visual resources in the sections on Manufacturing Zones and Landscaping. These sections limit height of structures, and establish landscaping requirements. The Fresno County General Plan contains pertinent LORS related to visual resources in the sections on public facilities and services, and open space and conservation. The Fresno County Zoning Ordinance contains an agricultural zone that is pertinent to the project's linear facilities.

## PROJECT DESCRIPTION

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The following section describes the aspects of the proposed project that may have the potential to cause adverse impacts to visual resources. Please refer to the **PROJECT DESCRIPTION** section of the Staff Assessment (SA) for a more complete discussion. The major visible components of the power plant include the 120 foot tall auxiliary boiler exhaust stack and the three 145 foot-tall HRSG exhaust stacks. The highest relief valves and vents on the HRSG units would extend to a height of 92 feet. The plant would be located at the southernmost edge of the City, and would be the focal point for southerly entrance to and exit from the City. The plant would be located in the southern portion of its 85 acre site to allow for a buffer between residential areas to the north that are separated from the plant site now by vacant land. To minimize visual impact of the plant Calpine has committed to a landscaping plan, which is also a zoning requirement.

The proposed 0.25-mile 230-kV double-circuit overhead transmission lines (supported by parallel steel pole structures ranging from 110 to 125 feet tall) (SJVEC 2001a, p. 8.11-15) would connect the project with PG&E's electric transmission system at the existing Helm Substation south of the project site (SJVEC 2001a, p. 8.11-7).

The proposed approximately 20-mile long buried natural gas pipeline would begin at the existing PG&E gas line located near Interstate 5 and run within the public rights-of-way of West Manning, South El Dorado, and West Springfield Avenues to the project site (SJVEC 2001a, p. 8.11-7). Except for the occasional aboveground warning signs, the underground gas pipeline would not be visible during operation. The water supply pipeline would also be buried, with occasional air release valves either flush with the

ground or in two feet by three feet rectangular surface vaults two feet in height (SJVEC 2001a, p. 8.11-18). The Applicant also plans to construct the underground water supply pipeline from the project site approximately 21 miles northeast to the water source, also along existing public rights-of-way along roads (SJVEC 2001a, pp. 8.11-7-8).

Surface conditions would be restored after gas and water pipeline construction (SJVEC 2001a, p. 8.11-26). Pipeline construction activities, materials, and personnel would be visible to travelers along all the roads noted above.

The area for construction worker parking and the laydown of equipment would be located on a 20-acre portion of the project property located to the north of the area where the project facilities would be built. (SJVEC 2001a, p. 8.11-16) The proposed construction laydown area would be primarily visible to motorists along Colorado Avenue.

## **SETTING**

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### **REGIONAL SETTING**

The proposed project would be located in the City of San Joaquin, Fresno County, a community located in a rural, sparsely populated portion of the Central Valley. The regional setting is primarily flat agricultural land, with small communities in the vicinity. The project would be 25 miles from the City of Fresno and Route 99, and 20 miles from Interstate 5 (I-5). There are no visually prominent natural features within the vicinity of the site except for the Coast Range hills to the west, which can be seen indistinctly on clear days. Due to the flat, agricultural nature of the region, visual quality is generally moderate.

### **PROJECT SITE AND VICINITY**

The vacant and partially vacant City parcels adjacent to the project site to the northeast and northwest of the project are zoned for manufacturing, as is the project site. Other lands adjacent to the project site are zoned for agricultural use. The site is generally level. The project site is presently used for agriculture. The Helms substation, 0.25 miles to the south of the project site, is the most prominent development in the area. There are several largely vacant commercial and industrial buildings in the vicinity of the site. The positive visual elements of the Coast Range hills and the agricultural use combined with the negative elements of the substation, transmission poles and wires, commercial and industrial buildings and streets, along with the flat nature of the land, cause the visual quality of the site and surrounding area to range from moderate to low-to-moderate.

### **VIEW AREAS AND KEY OBSERVATION POINTS**

**VISUAL RESOURCES** Figure 1 generally identifies the areas from which the project would be visible, also called the project viewshed. The power plant structures would be most visible in views from the agricultural lands to the southeast and southwest of the project site. Unobstructed views of the SJVEC would be available to travelers in both directions on Colorado and Springfield Avenues, which are adjacent to the site. There would also be unobstructed or partially obstructed views of the project from several City

residences on the southern edge of the City, and a small number of rural residences in unincorporated areas to the south of the City. Most views of the proposed project from the City's residential areas and streets to the north of the edge of the City would be screened by existing buildings and trees, except for the tallest project structures such as the 145 foot-tall HRSG stacks.

The Applicant selected four key observation points (KOPs) to characterize the existing visual setting within which the proposed project would be evaluated. **VISUAL RESOURCES** Figure 2 shows the location and view direction of the four KOPs selected for the proposed project. For each KOP, a visual analysis was conducted (a summary is presented in Appendix VR-1). The following discussion provides an assessment of the overall visual sensitivity at each KOP. Overall visual sensitivity takes into account existing landscape visual quality, viewer concern, and overall viewer exposure, which considers visibility, distance zone, number of viewers, and duration of view. **VISUAL RESOURCES** Figures 3 through 6 depict the views of the project site from the four KOPs.

### **KOP 1: Colorado Avenue at Springfield Avenue**

KOP I was established to represent views toward the SJVEC site from the northbound lane of Colorado Avenue and the westbound lane of Springfield Avenue. **VISUAL RESOURCES** Figure 3 depicts the existing view of the SJVEC site, which is approximately 0.19 miles from KOP 1.

#### **Visual Quality**

The view in the direction of the site is fairly open in character. The flat, open agricultural field of the project site occupies the foreground and middle ground area. A railroad berm and track are in the foreground. Wood transmission poles cross the site, and in the far middleground lie the low industrial buildings, houses, and trees that define the southern edge of the City of San Joaquin. On clear days, the ridgeline of the Coast Range hills can be seen low on the horizon in the far background. This low ridgeline is a positive visual element, but its intermittent visibility and the view's dissonant foreground and middle ground provide limited visual interest. Visual quality from this KOP is rated low to moderate.

#### **Visual Concern**

Neither Colorado nor Springfield Avenue is designated as a scenic route. However, all new development, including industrial development, is subject to minimum City landscape design requirements, indicating an increased level of viewer concern. The viewers from this KOP are travelers expected to be comprised of commuters and local residents whose sensitivity to visual change is moderate. For these reasons viewer concern is rated moderate.

#### **Viewer Exposure**

Northbound travelers on Colorado Avenue and westbound travelers on Springfield Avenue east of Colorado would have an unobstructed view within the cone of vision. Therefore this view's visibility is rated high. The project site is in the foreground of this view, causing a rating of high for the viewers' proximity to the site.

Based on field observations, the traffic level on Springfield Avenue in the vicinity of the project site is low. However, the traffic level on Colorado Avenue in the vicinity of Springfield Avenue is estimated at approximately 3,000 vehicles per day (SJVEC 2001a, p. 8.11-10). Therefore the number of viewers for this KOP is rated as moderate. The traffic speeds on Colorado Avenue appear to be high, but the project would be in view for a considerable distance, so duration of view is rated as moderate. Because of the high rating for site visibility and the viewers' short distance from the site, combined with the moderate number of viewers and the moderate duration of view, the overall viewer exposure is rated as moderate to high.

### **Overall Visual Sensitivity**

The overall visual sensitivity of the setting viewed from the area of KOP 1 is moderate based on the low to moderate rating for visual quality, moderate rating for viewer concern, and moderate to high viewer exposure.

### **KOP 2: Colusa Avenue North of Springfield Avenue**

KOP 2 was established to represent views toward the project site for travelers on Colusa and Springfield Avenues in this area, and for the residents of the two rural homes located on the west side of Colusa Avenue north of Springfield Avenue. Other residents farther to the west would also have views of the plant as explained in the section on other observation viewpoints. **VISUAL RESOURCES Figure 4** depicts the existing view of the SJVEC site on the other side of Colusa Avenue from one of the rural homes, at a distance of approximately 0.5 miles from the project site.

### **Visual Quality**

The most important aspect of the existing view from this location is the open, flat agricultural field in the foreground that continues to the horizon. Other less important elements in the background are indistinct views of transmission towers and clusters of trees on the horizon that surround scattered rural residences. Because this KOP has the advantage of an extensive view of green crops when in season, but includes the distant transmission towers, it is rated as having moderate visual quality.

### **Viewer Concern**

Springfield Avenue is not designated as a scenic route, but all new development, including industrial development, is subject to minimum landscape design requirements, indicating an increased level of viewer concern. The residents of the two houses at this KOP have high viewer concern, while the travelers, expected to be primarily commuters and local residents, have moderate concern.

### **Viewer Exposure**

The view from KOP 2 is unobstructed, and the project is located in the far foreground distance from KOP 2, so visibility of the site is high and the proximity of the viewpoint to the project site is moderate to high. Because the project site is viewed only by eastbound travelers on Springfield Avenue east of Colusa Avenue and from the front of the two rural residences, a low number of residential viewers and a low to moderate number of travelers would view the project site from the view area represented by this KOP. The duration of view from the affected residences is extended and the duration of

view by travelers is very short. Based on the above ratings, the overall view exposure is moderate for travelers and moderate to high for residents.

### **Overall Visual Sensitivity**

The overall visual sensitivity of the setting viewed from KOP 2 is moderate for travelers as a result of the moderate visual quality, visual concern, and viewer exposure. The overall visual sensitivity of this setting for residents is moderate to high due to the moderate visual quality, high concern, and moderate to high exposure.

### **KOP 3: Colorado Avenue at Manning Avenue**

KOP 3 was established to represent views toward the project site seen by southbound travelers on Colorado Avenue in the vicinity of Manning Avenue, views of westbound travelers on Manning Avenue turning southbound onto Colorado Avenue, and public views at the San Joaquin shopping center located at the northeast corner of Manning and Colorado Avenues. **VISUAL RESOURCES Figure 5** depicts the existing view of the SJVEC site at a distance of approximately 0.34 miles from the corner of Colorado and Manning Avenues.

### **Visual Quality**

The major elements in the existing view include the paved roadways and intersection in the foreground; the railroad berm and the disturbed area lying between it and the roadway; the flat, open agricultural fields that extend to the horizon; the PG&E Helm Substation in the middleground; and the lines and towers that are spread across the middleground area. Because of the open view and the visual interest provided by the agricultural fields, combined with the lack of topographic variation and other elements of potential visual interest, the visual prominence of the roadway, the disturbed area between it and the railroad berm, and the substation and transmission towers, the visual quality from this viewpoint is rated as low to moderate.

### **Visual Concern**

Neither Colorado nor Manning Avenue is designated as a scenic route. However, all new development, including industrial development, is subject to minimum landscape design requirements, indicating an increased level of viewer concern. Combined with the moderate concern of travelers and shoppers, this causes visual concern for this view to be rated moderate.

### **Viewer Exposure**

The view from KOP 3 towards the site from the intersection of Manning and Colorado Avenues is unobstructed, so visibility is high. The portion of the site on which the project would be built is in the foreground and to the left of the viewpoint, so proximity is high. Travelers going south on Colorado Avenue cannot see this view of the project site until just before they reach the intersection of Manning, because of warehouse and commercial buildings obstructing the view. The project site would be seen on the left by travelers going west on Manning Avenue. West Colorado Avenue is a major arterial roadway/expressway with an estimated average daily traffic volume of 2,295 vehicles in the vicinity of this viewpoint (SJVEC 2001a, Table 8.10.3). Manning Avenue is also a major arterial roadway/expressway with an estimated average daily traffic volume of

1,935 vehicles (SJVEC 2001a, Table 8.10.3). The project site from this viewpoint is visible from the shopping center's parking lot and from the parking lot's exit onto Manning Avenue. The number of viewers is moderate greater than at the other KOPs, but the duration of view is moderate due to the lack of residences and outside assembly areas. Therefore, overall viewer exposure is rated as moderate to high.

### **Overall Visual Sensitivity**

The overall visual sensitivity of the setting viewed from KOP 3 is moderate as a result of the low to moderate visual quality, moderate viewer concern, and moderate to high viewer exposure.

### **KOP 4: Idaho Street at 9<sup>th</sup> Street**

KOP 4 was established to represent views toward the CVEC site from the center of Idaho Street at 9<sup>th</sup> Street in a residential area with low level auto traffic. **VISUAL RESOURCES** Figure 6 depicts the existing view of the SJVEC site from the center of Idaho Street at 9<sup>th</sup> Street at approximately 0.7 miles from the SJVEC site.

### **Visual Quality**

A low industrial building obstructs the lower portion of the view at the end of the street; trees and houses block the view on the left and right. The industrial building is low and in the background so although it is of low visual quality it has little effect from this viewpoint. The dominant visual aspects, trees, residences, the street, and parked cars, are of mixed visual value, causing the visual quality of this view to be moderate.

### **Viewer Concern**

Residents in this area and travelers going south on Idaho Street can appreciate the older residential nature and the mature trees of this neighborhood, so viewer concern is high.

### **Viewer Exposure**

The industrial building, the trees, and the residences block the view of the project site except for the airspace above the industrial building where a small portion of the HRSG stacks and one HRSG would be seen. Because of the dense canopy of deciduous trees the residential views would be minimal during the spring, summer, and fall but more visible during the winter. Visibility for the residents and occasional traveler would be low to moderate because only a small portion of the project would be visible in the view down Idaho Street. The proximity of viewers is moderate at this KOP. Idaho Street is a little-traveled residential street, so the number of viewers would be limited to occupants of the occasional car and residents using the front portions of some of the front yards. Therefore, the number of viewers would be rated low to moderate. The duration of view for travelers and the number of travelers are low. For the residents, the number of viewers is low but the duration of view would be long, so duration of view would be rated as high. Overall viewer exposure is moderate because of the partially obstructed view and low numbers of viewers, the project site's location in the near background, and the long duration of view of the residents.

## Overall Visual Sensitivity

Overall Visual Sensitivity is moderate to high given the moderate visual quality, high viewer concern, and moderate viewer exposure.

## Other Observation Viewpoints

Energy Commission staff identified two other important view points from which some residents would have partial or full views of the power plant. **VISUAL RESOURCES Figure 7** shows sight lines to the project from these two locations noted as observation view point D (view from 12<sup>th</sup> Street) and observation view point E2 (view from Sutter Avenue):

- View from the Residences on the Southeast Side of 12<sup>th</sup> Street between Colorado and Arizona Avenues

**VISUAL RESOURCES Figure 8** shows the back sides of several residences located along the southeast side of 12<sup>th</sup> Street east of Colorado Avenue. The project site is visible from the open agricultural field behind these residences, and although the back yards have high fences and the homes are oriented towards the southeast of the site, residents might still have views of the higher project elements such as the HRSG stacks from their back windows and back yards. **VISUAL RESOURCES Figure 9** depicts the view from this area at California Avenue, about one-half mile from the project site. This view is seen from the side yard of the residence that lies on the southeast corner of 12<sup>th</sup> Street and California Avenue, and is partially visible from the front yard of the residence on the northeast corner of this intersection.

- View from the Residences on Sutter Avenue South of Manning Avenue

The homes on Sutter Avenue south of Manning Avenue, consisting of four-plex structures that are oriented around an internal circulation system, are 0.9 miles from the project site. Eight of these units have entrances facing Sutter Avenue and have views towards the project. From some of these eight residences views of the project site are substantially visible (see **VISUAL RESOURCES Figure 7**, viewpoint E2).

## IMPACTS ANALYSIS

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### METHODOLOGY

Visual resources analysis has an inherently subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

### Significance Criteria

Commission staff considered the following criteria in determining whether a visual impact would be significant.

## STATE

The CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including...objects of historic or aesthetic significance” (Cal. Code Regs. tit.14, § 15382).

Appendix G of the Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

## LOCAL

Energy Commission staff considers any local goals, policies, or designations regarding visual resources. Conflicts with such laws, ordinances, regulations, and standards can constitute significant visual impacts. See the section on Laws, Ordinances, Regulations, and Standards.

### Professional Standards

Professionals in visual impact analysis have developed a number of questions as a means of evaluating the potential significance of visual impacts (see Smardon 1986). The questions listed below address issues commonly raised in visual analyses for energy facilities. Staff considers these questions in assessing whether a project would cause a significant impact in regard to any of the four CEQA criteria listed above.

- Will the project substantially alter the existing viewshed, including any changes in natural terrain?
- Will the project deviate substantially from the form, line, color, and texture of existing elements of the viewshed that contribute to visual quality?
- Will the project eliminate or block views of valuable visual resources?
- Will the project result in significant amounts of backscatter light into the nighttime sky?
- Will the project be in conflict with directly identified public preferences regarding visual resources?

- Will the project result in a significant reduction of sunlight, or the introduction of shadows, in areas used extensively by the community?
- Will the project result in a substantial and persistent visible exhaust plume?

### **Impact Duration**

The visual analysis typically distinguishes three different impact durations. **Temporary impacts** typically last no longer than two years. **Short-term impacts** generally last no longer than five years. **Long-term impacts** are impacts with a duration greater than five years.

### **View Areas and Key Observation Points**

The proposed project would be visible from a number of areas in the project region. Energy Commission staff evaluated the visual impact of the project from each of these areas. Staff used Key Observation Points<sup>1</sup>, or KOPs, as representative locations from which to conduct detailed analyses of the proposed project and to obtain existing conditions photographs and prepare visual simulations. KOPs are selected to be representative of the most critical locations from which the project would be seen. However, KOPs are not the only locations that staff considered in each view area.

### **Evaluation Process**

For each view area, staff considered the existing visual setting and the visual changes that the project would cause to determine impact significance. Staff conducted a site visit and concluded that the KOPs presented in the Application were appropriate for this analysis. The results of staff's analysis are summarized in **VISUAL RESOURCES Appendix VR-1**. Existing conditions photographs and photo-simulations from each KOP are presented with all other figures in **VISUAL RESOURCES Appendix VR-3**.

### ***Elements of the Visual Setting***

To assess the existing visual setting, staff considered the following elements:

#### **Visual Quality**

Visual quality is an expression of the visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. This analysis used an approach that considers visual quality as ranging from outstanding to low. Outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as "picture postcard" landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

#### **Viewer Concern**

Viewer concern is a measurement of the level of viewer interest regarding the visual resources in an area. Official statements of public values and goals reflect viewers' expectations regarding a visual setting. This analysis also employed land use as an indicator of viewer concern. Uses associated with 1) designated parks, monuments, and wilderness areas, 2) scenic highways and corridors, 3) recreational areas, and 4) residential areas are generally considered to have high viewer concern. However, existing landscape character may temper viewer concern on some State and locally

designated scenic highways and corridors. Similarly, travelers on other highways and roads, including those in agricultural areas, may have moderate viewer concern depending on viewer expectations as conditioned by regional and local landscape features. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality, with respect to landscaping, building height limitations, building design, and prohibition of above-ground utility lines, that indicate high viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

### **Viewer Exposure**

The visibility of a landscape feature, the viewing distance to the landscape feature, the number of viewers, and the duration of the view all affect the exposure of viewers to a given landscape feature. Visibility is highly dependent on screening and angle of view. The smaller the degree of screening and/or the closer the feature is to the center of the view area, the greater its visibility is. Increasing distance reduces visibility. Viewer exposure can range from low values for all factors, such as a partially obscured and brief background view for a few motorists, to high values for all factors, such as an unobstructed foreground view from a large number of residences.

### **Overall Visual Sensitivity**

The overall level of visual sensitivity assesses a view area by considering visual quality, viewer concern, and viewer exposure. The value of overall visual sensitivity ranges from low to high.

### **Types of Visual Change**

To assess the visual changes that the project would cause, staff considered the following factors:

#### **Contrast**

Visual contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from low to high. The presence of forms, lines, colors, and textures in the landscape similar to those of a proposed project indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability, which typically is inversely proportional to visual contrast.

#### **Dominance**

Another measure of visual change is project dominance. Dominance is a measure of a feature's apparent size relative to other visible landscape features and the total field of view. A feature's dominance is affected by its relative location in the field of view and the distance between the viewer and the feature. The level of dominance can range from subordinate to dominant.

## View Blockage

View blockage describes the extent to which any previously visible landscape features are blocked from view by the project. Blockage of higher quality landscape features by lower quality project features causes adverse visual impacts. The degree of view blockage can range from none to high.

## Overall Visual Change

Staff assesses the overall level of visual change by considering the above visual change factors, with the factors of highest impact generally defining the level of change.

## Significance without Mitigation

Staff assesses whether the project's visual impact would be significant by considering overall visual sensitivity and overall visual change.

## Significance with Mitigation

The last step in Staff's analysis is to assess whether the project's visual impact with recommended mitigation would remain significant.

## ENVIRONMENTAL CHECKLIST

VISUAL RESOURCES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?		X		
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?		X		

## DIRECT IMPACTS

A summary of the impact analysis is presented in a table in Appendix VR-1. The impact assessment methodology and significance criteria utilized in this study are described above. The following discussion explains the responses to the questions in the environmental checklist above.

## **A. Scenic Vistas**

As explained earlier, the only scenic feature in the area of the City of San Joaquin is the Coast Range hills, which can be seen indistinctly in the far distance to the west of the site on a clear day. Other elements in the area (streets, railroad, transmission lines, and industrial buildings) prevent a description of the vista as scenic. In views toward the west, from the east of the project, the project would substantially block the view of the Coast Range hills.

## **B. Scenic Resources**

As indicated in the previous discussion of LORS, there are no state-designated scenic highways or other State-dedicated scenic resources within the proposed project viewshed. Furthermore, the project would not substantially damage scenic resources such as trees, rock outcroppings, and historic buildings. Thus, the project would not have a substantial adverse effect on scenic resources.

## **C. Visual Character or Quality**

Project aspects that were evaluated in the assessment of visual character or quality included effects associated with project construction, the power plant structures, electric transmission lines, natural gas and water supply pipelines, and visible water vapor plumes.

### **Project Construction**

Construction of the proposed power plant and linear facilities would cause temporary visual impacts due to the presence of equipment, materials, excavated piles of dirt, and work force. Construction activities would include site clearing and grading, trenching, construction of actual facilities, and cleanup and restoration of the site and rights-of-way. Project construction (including the transmission line) would occur over a 24 to 27 month period. Construction of the gas and water supply pipelines would last about 12 months.

### ***Mitigation Measures***

The Applicant proposes to restore surface conditions after completing construction of the underground pipelines. The laydown area would be set back 200 feet from Colorado Avenue. The Applicant also proposes to surround the construction laydown sites with chain link security fences. Staff has proposed a condition of certification (**VIS-1**) incorporating these measures; **VIS-1** also requires that opaque, solid slats or other screening material be used with the fences. Through the above measures the proper implementation of **VIS-1** would ensure that potential visual impacts associated with project construction remain less than significant.

### **Project Operation - Power Plant**

**VISUAL RESOURCES Figures 10 through 13** present visual simulations of the proposed power plant at the start of operation viewed from KOPs 1 through 4 respectively. **VISUAL RESOURCES Figure 14** depicts a visual simulation from KOP 1 of the project at 20 years.

## ***KOP I: Colorado Avenue at Springfield Avenue***

### Contrast with Landforms and Existing Structures

**VISUAL RESOURCES** Figure 10 depicts the simulation of the power plant from KOP 1 at the start of operation. The major existing structures in the view from KOP I are, in the background, low lying commercial buildings and, indistinctly, a few residences; and in the mid-ground, several transmission towers cross the site. The Coast Range hills can be seen indistinctly in the distant background. The power plant structures would be in the foreground. The plant's air intake units, HRSG units, HRSG stacks, steam turbine generator, cooling tower, and transmission towers would all be highly visible from this KOP, and therefore for the most part block the above background views. The project's complex, geometric form would contrast strongly with the landscape, but the plant's effect would be tempered somewhat by existing signs, poles, and buildings, so form contrast would be moderate to high. Scale contrast would be high in relation to the existing landscape features and structures due to the substantially smaller apparent size of the existing transmission lines and low-level industrial buildings. The juxtaposition of the project's tall, narrow stacks and transmission towers with the irregular form of the agricultural landscape and Coast Range hills would cause substantial line contrast, but this would be moderated by the low line contrast with existing poles, signs, and background transmission towers, so line contrast would be moderate. The light gray color of the proposed power plant and transmission lines would cause low contrast with the existing light gray transmission towers and low to moderate contrast with the light blue color of the sky. In summary, the power plant would cause moderate to high form contrast, high scale contrast, moderate line contrast, and low to moderate color contrast with existing land and background forms, resulting in overall high contrast.

### **Project Dominance**

The view from KOP 1 is panoramic and open and the project would be skylined and near the center of the view, so spatial dominance would be moderate to high. The plant, would be in the foreground, skylined, would be the major object in the view, and would occupy the field of view almost completely, so scale dominance would be high. Spatial dominance would be moderate to high. Overall dominance from this KOP would be high.

### **View Blockage**

In the existing view from KOP I the Coast Range hills are distantly visible and have a low profile. The project would substantially block the hills visible in the view from KOP I. However, because existing visual quality is low to moderate, the severity of view blockage would be moderate.

## Overall Visual Change and Visual Impact Significance

The power plant would cause moderate view blockage but high visual contrast and high project dominance. Thus, the overall visual change due to the power plant would be high. Combined with the moderate overall visual sensitivity of the setting, the resulting visual impact would be significant.

## Mitigation Measures

To screen views towards the project site from the area of KOP 1, the Applicant proposes to implement a landscaping plan that would substantially screen the view of the project and compensate for the loss of the Coast Range hill view after 20 years of operation (see **VISUAL RESOURCES Figure 14**). However, the Applicant's simulation of the landscaping at the time of installation (**VISUAL RESOURCES Figure 15**) shows that the only landscaping at that time that would provide any substantial screening from the area of KOP 1 would be the 25-foot tall palm trees. The Applicant refused staff's request to provide a simulation of the landscaping at five years after installation, but it is evident from the comparison of the two figures that the proposed landscaping would not substantially screen the power plant after five years. The Applicant has also clarified that its Revised Conceptual Landscape Plan provides all the detail that is available regarding the Applicant's proposed landscaping. For KOP 1, to increase the degree of screening that would be provided both at installation and within five years after installation, staff recommends that the Applicant's proposed landscaping be modified as follows:

- Construct a 5-foot tall berm along the project site perimeter from the southeast corner of the project site to the cooling tower, parallel to Colorado Avenue, and to the switchyard, parallel to Springfield Avenue. This would provide immediate visual screening of the lower portions of the project facilities;
- Plant shrubs and groundcover on the berm;
- Add to the group of trees near the southeast corner of the project site one row of palm trees that at planting are approximately 15 feet tall and at maturity attain a height of approximately 25 feet;
- Add to the group of trees near the southeast corner of the project site one row of palm trees that at planting are approximately 5 feet tall and at maturity attain a height of approximately 10 feet;
- Plant a row of the 25-foot tall palm trees, a row of the 15-foot tall palm trees, and a row of the 5-foot tall palm trees from the group of trees to be planted at the southeast corner of the site to the cooling tower, instead of the trees proposed for that portion of the site perimeter;
- Plant a row of the 25-foot tall palm trees, a row of the 15-foot tall palm trees, and a row of the 5-foot tall palm trees from the group of trees to be planted at the

southeast corner of the site west to the switchyard, instead of the trees proposed for that portion of the site perimeter;

- Provide two offset rows of trees along the northeast side of the project site to the southeast end of the cooling tower, replacing the proposed deciduous trees with broad leaf evergreen trees and tall broadleaf evergreen trees.

Staff's proposed Condition of Certification **VIS-2** would require the Applicant to submit their proposed landscaping plan which must include information on the size, species, spacing, number, and location of plants. Effective implementation of the above measures through staff's proposed Condition of Certification VIS-2 would reduce the adverse visual impacts of the project to views from the area represented by KOP 1 to less than significant levels because the required landscaping would prevent a significant long-term visual impact and would provide a positive visual element to the view.

The Applicant proposes elements of site design that would assist in mitigating the project's impacts on visual resources: placement of the power plant as far to the south on the site as is feasible to maximize its distance from potential viewers; placement of the water tanks, administration building, and other smaller structures on the northern edge of the site to create a transition in scale in views; and creation of a 100-foot setback area between the edge of the Union Pacific Railroad right-of-way and the closest project feature (the cooling tower) to create setback and provide room for landscape screening (SJVEC 2001a, p. 8.11-25). In consultation with the City, the Applicant proposes color tones for project structures that reduce contrast (SJVEC 2001a, p. 8.11-25). Staff recommends Conditions **VIS-3** requiring approval of a treatment plan.

### ***KOP 2: Colusa Avenue North of Springfield Avenue***

#### Contrast with Landscape and Existing Structures

**VISUAL RESOURCES Figure 11** depicts a simulation of the power plant as seen from KOP 2 at the start of operation. The predominant view from KOP 2 is the open, flat agricultural field that extends to the horizon. Tall lattice steel transmission towers can be seen across the distant background. The bulky and tall elements of the power plant, extending through about half of the horizon line in the view's near middle ground, would cause high form contrast with the agricultural fields. Line contrast would be moderate to high due to the juxtaposition of the project's tall, narrow stacks with the irregular form of the surrounding agricultural vegetation, moderated somewhat by existing electric line poles in the background. Scale contrast would be high because the power plant would appear much larger than the few indistinct built elements in the background. The light gray color of the power plant would provide low to moderate contrast with the light blue sky background and moderate to high contrast with the agricultural field when in season. In summary, the power plant would cause high form contrast, moderate to high line contrast, high scale contrast, and moderate color contrast at this viewpoint, so overall contrast would be high.

## **Project Dominance**

Because of the power plant's position in the middle ground, the plant would appear moderate in size from this KOP, and would be an imposing addition to a relatively flat setting, so scale dominance would be moderate to high. Although the plant would be situated in a panoramic landscape, it would be in the center of the view and back dropped by sky, so spatial dominance would be moderate to high. Overall dominance would be moderate to high.

## **View Blockage**

View blockage would be low to moderate, since the project would block a moderate portion of a moderate quality view.

## **Overall Visual Change and Visual Impact Significance**

Considering the project's high contrast, moderate to high dominance, and low to moderate view blockage, the degree of overall visual change would be moderate to high, and in combination with the overall visual sensitivity of the site of moderate for travelers and moderate to high for residents, the resulting impact would be significant.

## **Mitigation Measures**

To screen views toward the project site from the area represented by KOP 2, the Applicant proposes to implement a landscaping plan. The Applicant's conceptual landscape plan depicts a single row of olive trees along the east side of Colusa Boulevard from Springfield Avenue north for approximately ¼ mile. However, the conceptual landscape plan also specifies that only eight olive trees would be planted. A single row of eight olive trees spaced over a ¼ mile distance would not provide substantial visual screening even at maturity. Furthermore, olive trees grow slowly, so they would take many years to reach maturity. Staff recommends instead that two offset rows of a faster growing evergreen tree species be planted at spacing that would achieve a virtually continuous screen at maturity. Effective implementation of this measure through staff's proposed Condition of Certification **VIS-2** would reduce the adverse visual impacts of the project from this KOP to a less than significant level because the required landscaping would sufficiently screen the power plant facilities and would provide a positive visual element to the view.

See the previous discussion of mitigation measures for KOP 1 for an explanation of the use of color and site design, and recommended condition **VIS-3**.

## ***KOP 3: Colorado Avenue at Manning Avenue***

### **Contrast with Landscape and Existing Structures**

**VISUAL RESOURCES FIGURE 12** depicts a simulation of the power plant from KOP 3 at the start of operation. The predominant elements in the landscape from this view are the street surface, phone pole, and railroad berm in the foreground; the substation and transmission towers in the near background; and the agricultural fields. The complex, geometric project elements, in the middle ground, would cause moderate to high form contrast with the existing built environment, which contains the flat streets and low-level railroad berm, moderated somewhat by the substation and vertical structures of various

sizes. Scale contrast would be moderate to high in comparison to the various smaller vertical structures and the agricultural vegetation. Line contrast would be moderate given the combination of the irregular lines of the agricultural landscape and straight lines of existing streets, railroad, poles, signs, and background transmission towers in juxtaposition to the project's primarily straight lines along with the rounded portions of some portions of the plant. Because this is a view from the northeast, the project's gray color would appear shaded and darker than from other views because it would generally be back-lit by the sun, so the color would provide low contrast to the dark green agricultural field and higher contrast the light blue sky, for overall low to moderate color contrast. In summary, the power plant would cause moderate to high form and scale contrast, moderate line contrast, and low to moderate color contrast in comparison to the existing environment at this viewpoint, for an overall contrast rating of moderate to high.

### **Project Dominance**

From the vicinity of this KOP the project would occupy a moderate to large portion of the view, so scale dominance would be moderate to high. The plant would be centrally located in the panoramic landscape, and would be back-dropped by sky, so spatial dominance would be moderate to high. Overall dominance would be moderate to high.

### **View Blockage**

Since the project would block a portion of a view with low to moderate visual quality, the severity of view blockage would be low to moderate.

### **Overall Visual Change and Visual Impact Significance**

The power plant would cause moderate to high contrast and dominance, and low to moderate view blockage, for an overall visual change rating of moderate to high. Combined with the moderate rating of this KOP's visual sensitivity, the power plant would cause a significant visual impact.

### **Mitigation Measures**

To screen views toward the project site from the area of KOP 3, the Applicant proposes to plant a single row of trees at the northwestern corner of the project site. The applicant's conceptual landscape plan shows that most of these trees would be deciduous. . Staff recommends instead that two offset rows of broadleaf evergreen trees be planted in this area to provide more visual screening. Effective implementation of this measure through staff's proposed Condition of Certification **VIS-2** would reduce the adverse visual impacts of the project on views from the area represented by KOP 3 to a less than significant level because the required landscaping would sufficiently screen the power plant facilities and would provide a positive visual element to the view.

See the previous discussion of mitigation measures for KOP 1 for an explanation of the use of color and site design to minimize visual impacts, and recommended condition **VIS-3**.

#### **KOP 4: Idaho Street at 9<sup>th</sup> Street**

##### **Contrast with Landscape and Existing Structures**

**VISUAL RESOURCES** Figure 13 depicts a simulation of the power plant from KOP 4 at the start of operation. The dominant views from this KOP are of the residential elements: trees, houses, front yards, the street, parked cars, telephone/electric lines, street signs, and lamp posts. The low-rise industrial building at the end of the street and the trees would block the view of the project except for the top portions of two of the plant's HRSG stacks and the top portion of one of its HRSG units in the far middle ground. The predominantly vertical form of these visible parts of the power plant would cause low to moderate form contrast, depending on how close the viewer is to the power plant in the vicinity of this KOP, because of the bushy but tall trees and the smaller apparent size of the stacks. Scale contrast would also be low to moderate for these reasons. Also, the lamp pole and the one tall narrow tree in the foreground lower the form and scale contrast for viewers farther away from the power plant. The straight lines of the stacks would cause moderate to high line contrast, given the numerous large, bushy, irregularly shaped trees in the foreground and middleground. The shadow-darkened gray of the visible plant elements as seen from this northerly view would cause low to moderate contrast to the dark green trees in the foreground and middleground, but moderate contrast with the light blue-sky background, for overall color contrast of low to moderate. With low to moderate form, scale, and color contrast, and moderate to high line contrast, overall contrast for this KOP would be moderate..

##### **Project Dominance**

The visible portion of the power plant occupies a small portion of the view, so scale dominance would be low. The visible stacks would be central in view and sky-lined in an enclosed view, so spatial dominance would be high. Overall dominance would be moderate.

##### **View Blockage**

Blockage by the plant from this KOP would be low, since the stacks and HRSG units would block only a small portion of sky.

##### **Overall Visual Change and Visual Impact Significance**

From this KOP, the power plant would cause moderate contrast and dominance, and low view blockage. Therefore, the overall visual change that would be experienced at KOP 4 would be moderate. Combined with the overall visual sensitivity of moderate to high, the resulting impact would be adverse but less than significant.

##### **Mitigation Measures**

No mitigation measures are necessary for the project's visual impacts to the view area that this KOP represents.

### ***Other Observation Points***

- Views from the residences on the southeast side of 12<sup>th</sup> Street between Colorado and Arizona Avenues: residents might have views of the higher project elements such as the HRSG stacks from their back windows and yards.
- Views from the residences on Sutter Avenue south of Manning Avenue: some of these eight residents would have substantial views of the power plant.

These locations are not KOPs with simulations developed by the Applicant, but Energy Commission staff worked with the Applicant to provide mitigation for possible visual impacts at these locations. The Applicant's conceptual landscape plan shows a single row of palm trees, 25 feet tall at planting, along each side of Manning Avenue east of Colorado Avenue. Because only the fronds of palm trees provide substantial visual screening, additional landscaping is needed to screen the lower portions of views of the project from the residences on the southeast side of 12<sup>th</sup> Street between Colorado and Arizona Avenues. Staff recommends that one row of palm trees that at planting are approximately 15 feet tall and at maturity attain a height of approximately 25 feet and one row of palm trees that at planting are approximately 5 feet tall and at maturity attain a height of approximately 15 feet be planted on the south side of Manning Avenue.

The Applicant's conceptual landscape plan shows a single row of trees along the northern half of the western boundary of the project site, and many of the proposed trees are deciduous. A single row of trees would not provide sufficient screening for many years, and then the portion of the landscaping composed of deciduous trees would not provide substantial year-round screening. Staff recommends that two offset rows of tall evergreen trees be planted in this area. Additional deciduous trees may be included to provide variety.

Effective implementation of these measures through Condition of Certification **VIS-2** would reduce the project's long-term visual impacts for the view areas that these observation points represent to less than significant levels because the landscaping would substantially screen views of the project and would provide a positive visual element to the view.

### **D. Light and Glare**

Any nighttime construction would require lighting for operational safety and security. To reduce the potential for offsite light impact at night and glare impacts during the day, the Applicant has proposed the following mitigation measures (SJVEC 2001a, p. 8.11-25):

- Minimal signage and construction of project signs using non-glare materials and unobtrusive colors.
- Lighting only the areas required for safety, security, or operations, and shielding of lighting from public view to the extent possible. Timers and sensors would be used to minimize the time that lights are on in areas where lighting is not normally needed for safety, security, or operation.
- Direction and shielding of lighting to reduce light scatter and glare. Highly directional light fixtures would be used.

During construction, the Applicant proposed that nighttime lighting be directed towards the center of the construction site and shielded, and that task-specific lighting be used when practical (SJVEC 2001a, p. 11-16).

To reduce potential glare from project structures that could affect daytime views, the Applicant has proposed the following mitigation measures (SJVEC 2001a, p. 8.11-26):

- Insulators would be non-reflective and non-refractive.
- Non-specular conductors would be used.
- Insulators would be non-reflective and non-refractive.

Staff has incorporated these and other measures as conditions of certification **VIS-3, 4, 5, and 6**. Proper implementation these conditions would keep visible nighttime lighting and daytime glare impacts to less than significant levels.

## **E. PLUME ANALYSIS**

Staff analyzed potential visible plumes from the SJVEC cooling tower, heat recovery steam generator (HRSG) stacks, and auxiliary boiler exhaust stack. The Applicant has not proposed any visible plume abatement for the cooling tower, HRSG or auxiliary boiler exhausts.

Visible plumes generally occur during periods of cold and wet weather. The actual frequency of occurrence is dependent on the plant operation and weather conditions, which will vary from year to year. Visible plume formation can occur during the daytime or nighttime; however, the meteorological data reviewed indicates that conditions for visible plume formation are more prevalent during nighttime and early morning hours.

### **Cooling Tower Visible Plumes**

Staff modeled unabated conditions under a variety of operating scenarios for the cooling towers using exhaust data provided by the Applicant (SJVEC 2001a, AFC Section 8.11.4.3.5; SJVEC 2002a, Attachment VIS-138, Data Response 138-139; Harrison 2002). The visible plume frequency results from the Combustion Stack Visible Plume (CSVP) modeling (Walters/Blewitt 2002) are presented in **Visual Resources Table 1**.

**VISUAL RESOURCES Table 1**  
**Staff Predicted Hours with Cooling Tower Steam Plumes**  
**Lemoore 1992-1995 and 1997 Meteorological Data**  
**(CSVP Model)**

		<b>Duct Firing (All Hours)</b>		<b>Limited Duct Firing (Noon to 8 pm)</b>		<b>No Duct Firing (All Hours)</b>	
	<b>Available (hr)</b>	<b>Plume (hr)</b>	<b>Percent</b>	<b>Plume (hr)</b>	<b>Percent</b>	<b>Plume (hr)</b>	<b>Percent</b>
All	43,824	19,836	44.2%	14,373	32.8%	12,900	29.4%
Daytime	22,177	6,662	30.0%	4,868	22.0%	3,901	17.6%
Nighttime	21,647	13,174	60.9%	9,505	43.9%	8,999	41.6%
Daytime No Rain/Fog	19,384	4,113	21.2%	2,480	12.8%	1,721	8.9%
Seasonal Daytime No Rain/Fog*	7,371	3,105	42.1%	2,213	30.0%	1,471	20.0%

\*Seasonal conditions occur anytime from November through April.

The cooling tower operating data provided by the Applicant is inconsistent. Staff performed a simple energy balance that appears to show that the exhaust temperature and flow rate data provided by the Applicant would estimate higher heat rejection rates than those given by the Applicant for duct firing or non-duct firing operations. Staff believes that this data inconsistency might cause a slight over prediction of the cooling tower plume frequencies.

A plume frequency of 10 percent of seasonal (November through April) daylight no rain/fog high contrast hours has been used as a plume impact study threshold. The reasonable worst-case operating condition is expected to be baseload operations with limited duct firing (see Limited Duct Firing column in **Table 1**). Under these operating conditions, the frequency of seasonal daylight no rain/no fog (SDNRNF) high contrast hours plume visibility is estimated at 8.2 percent of seasonal daylight no rain no fog hours (see **Table 2 below**). The “clear” hours are defined as the high contrast hours for plume visibility. Because the “clear” hours visible plume frequency is less than 10 percent, an impact analysis is not required for the cooling tower water vapor plumes. To ensure that the cooling tower is installed and operated in a manner that produces plumes approximating the frequency staff’s modeling has predicted, staff has proposed condition of certification **VIS-7**.

**Table 2 - Cooling Tower High Visual Contrast SDNRNF Plumes  
CSVP Modeling Results – Limited Duct Firing Case**

Amount of Total Sky Cover					
All		Clear		Scattered/Broken/Overcast	
Hrs	%	Hrs	%	Hrs	%
2,213	30.0	605	8.2	1,608	21.8

\* - Percentiles calculated by dividing the number of plume hours by the reference number of seasonal daylight no rain no fog hours (7,371).

### ***Cloud cover data analysis Method (Walters/Blewitt 2002)***

The Energy Commission has identified a “clear” sky category during which plumes have the greatest potential to cause adverse visual impacts. For this project the meteorological data set used in the analysis categorizes total sky cover as “clear”, “scattered”, “broken”, “overcast”, “partially obscured”, and “obscured”. When the opaque sky cover is less than 50% the ceiling height is given as unlimited, which is represented by the number “722”. For the purpose of estimating the high visual contrast hours staff has included in the “Clear” category a) all hours with total sky cover defined as “clear” plus b) half of the non-obscured hours with unlimited ceiling height (i.e. hours with a sky opacity equal to or less than 50%). The rationale for including these two components in this category is as follows: a) plumes typically contrast most with sky under clear conditions and b) for a substantial portion of the time when total sky cover is not clear or obscured the opacity of the sky cover is relatively low (equal to or less than 50%), and these clouds do not substantially reduce contrast with plumes. Staff has estimated that approximately half of the hours with a sky opacity of less than 50% can be considered high visual contrast hours and are included in the “clear” sky definition.

There are no large, frequent existing plumes in the project region.

## HRSG Visible Plumes

Staff modeled unabated conditions under a variety of operating scenarios for the HRSG plume, using exhaust data provided by the Applicant (SJVEC 2001a, AFC Section 8.11.4.3.5; SJVEC 2002a, Attachment VIS-138, Data Response 140-141). The visible plume frequency modeling results (Walters/Blewitt 2002, see Appendix VR-4) are presented in **Visual Resources Table 3**.

**VISUAL RESOURCES Table 3**  
**Staff Predicted Hours with HRSG Steam Plumes**  
**Lemoore 1992-1995 and 1997 Meteorological Data**

	Available (hr)	Limited Duct Firing		Limited Peaking		Worst Case <sup>a</sup>	
		Plume (hr)	Percent	Plume (hr)	Percent	Plume (hr)	Percent
All	43,824	4,624	10.6%	4,683	10.7%	28,008	63.9%
Daytime	22,177	1,636	7.4%	1,634	7.4%	10,104	45.6%
Nighttime	21,647	2,988	13.8%	3,049	14.1%	17,904	82.7%
Daytime No Rain/Fog	19,384	489	2.5%	482	2.5%	7,401	38.2%
Seasonal Daytime No Rain/Fog*	7,371	484	6.6%	477	6.5%	5,059	68.6%

\*Seasonal conditions occur anytime from November through April.

<sup>a</sup> The worst case condition assumes both duct firing and steam injection. It is assumed that this operating case would occur infrequently and will not significantly affect the reasonable worst-case plume frequency determined for the SJVEC HRSGs.

As can be seen in **Table 3**, the unabated plumes resulting from the HRSG operations are highly dependent on whether the duct burners and/or steam injection are operating. The reasonable worst-case operating condition is expected by staff to be baseload operations with limited duct firing, while the applicant identified a slightly different limited peaking condition to be the reasonable worst case condition. Under both of these assumed reasonable worst-case operating conditions, the seasonal daylight no rain/fog visible plume frequency is determined to be approximately 6.6 percent, which means that the seasonal daylight no rain/fog high contrast hours plume frequency would be well below the significance threshold of 10 percent.

## Auxiliary Boiler Visible Plumes

Staff modeled normal operations for the auxiliary boiler using exhaust data provided by the Applicant (SJVEC 2001a, AFC Section 8.11.4.3.5; SJVEC 2002a, Attachment VIS-138, Data Response 142). The visible plume frequency modeling results are presented in **Visual Resources Table 4**.

**VISUAL RESOURCES Table 4**  
**Staff Predicted Hours with Auxiliary Boiler Steam Plumes**  
**Lemoore 1992-1995 and 1997 Meteorological Data**

	Available (hr)	Plume (hr)	Percent
All	43,824	4,858	11.1%
Daylight	22,177	1,225	5.52%
Daylight No Rain/Fog	19,384	248	1.28%
Seasonal Daylight No Rain/Fog*	7,371	236	3.20%

\*Seasonal conditions occur anytime from November through April.

As can be seen in **Table 4**, the frequency of plumes resulting from the auxiliary boiler under normal operating conditions during seasonal daylight no rain/fog hours is 3.20 percent, which means that the seasonal daylight no rain/fog high contrast hours plume frequency would be well below the significance threshold of 10 percent.

## **CUMULATIVE IMPACTS**

No reasonably foreseeable planned projects that would contribute to cumulative visual impacts were identified.

## **ENVIRONMENTAL JUSTICE**

Staff has reviewed Census 2000 information that shows the minority population is greater than 50 percent within a six-mile radius of the proposed SJVEC power plant, (please refer to **SOCIOECONOMICS Figure 1**), and Census 1990 information that shows the low-income population is less than 50 percent within the same radius. Views from KOPs 1 and 3 affect only viewers who are travelers or shoppers, for whom information on percentage of minority and low-income identity is not available. KOP 4 is located in a residential area, but as explained above the power plant would not cause a significant impact from this KOP. KOP 2 primarily represents the views of travelers; however, it also represents two residences, and the staff-identified observation points affect several residences. It appears that visual impact at KOP 2 and the two observation viewpoints identified by staff would not be sufficiently mitigated by the Applicant's proposed landscape plan, but would be by staff's proposed conditions of certification. Therefore, there are no visual resources environmental justice issues related to this project.

## **COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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### **LOCAL**

**VISUAL RESOURCES Table 5** provides a listing of the applicable City of San Joaquin and Fresno County LORS. Ten relevant policies and standards were found to pertain to the enhancement and/or maintenance of visual quality. **Table 5** includes a determination of the project's consistency with these goals, policies and standards. The project as proposed would be consistent with all County General Plans and zoning goals, policies, and standards. The project as proposed would not be consistent with the City General Plan goals and policies, but with implementation of staff's proposed conditions, the project would be consistent. The project would not comply with the City's height requirement zoning standard related to visual resources. Compliance with this standard through the City's zoning variance process is possible, and staff has obtained an advisory resolution from the City regarding the requirements for this variance, indicating that the City would grant the variance if requested, conditioned on installation of a landscaping plan appropriate for the zoning designation.

**VISUAL RESOURCES Table 5**  
**Proposed Project's Consistency with**  
**Local LORS Applicable to Visual Resources**

<b>LORS</b>		<b>Consistency Determination Before Mitigation / Conditions</b>	<b>Basis for Consistency</b>
<b>Source</b>	<b>Policy and Strategy Descriptions</b>		
City of San Joaquin Comprehensive General Plan	Policy 1.B.5. Industrial development should be compatible with the surrounding area. This shall include adequate environmental mitigation, for noise, orders (sic), potential releases of hazardous materials, and public vistas.	NO	The project would be compatible with the surrounding area because the City parcels adjacent to the project site are zoned for manufacturing, and the adjacent County parcels are zoned for agricultural use. The project would be compatible with the City's overall land use and urban design strategy. The project's landscaping would assist in blocking views into the site and protecting public vistas. However, further landscaping information and plan review is necessary; further mitigation may be required.
City of San Joaquin Comprehensive General Plan	Goal No. 6: New public and private development shall take into account community image and appearance. Development regulations shall express appropriate concern for visual quality. Efforts in this endeavor will be reflected in site planning and engineering, architectural design, landscaping, street and open space improvements, business functions and cultural activities.	NO	The project would have adequate setbacks from surrounding roads and adjacent properties, and would be heavily landscaped. However, the landscape plan does not appear to adequately mitigate impact.
City of San Joaquin Comprehensive General Plan	Policy 6.A.1: The City shall take into consideration as one factor in urban development the aesthetics of development.	YES	The City has reviewed and approved the preliminary landscape plan and the site plan.

**VISUAL RESOURCES Table 5**  
**Proposed Project's Consistency with**  
**Local LORS Applicable to Visual Resources**

<b>LORS</b>		<b>Consistency Determination Before Mitigation / Conditions</b>	<b>Basis for Consistency</b>
<b>Source</b>	<b>Policy and Strategy Descriptions</b>		
City of San Joaquin Comprehensive General Plan	<p>Industrial Land Use Policies and Proposals</p> <p>Industrial sites should be subject to the same standards for visual screening with ornamental walls, screen fencing and landscaping and street trees, frontage landscaping and parking lot landscaping as provided for commercial areas. Screening of outdoor storage should be required.</p>	YES	The project would be generally consistent with this policy because it would include extensive landscape screening.
City of San Joaquin Zoning Ordinance	<p><b>Section 17.60 M; Manufacturing Zones (M1)</b></p> <p><b>17.60.030 Height of Structures</b></p> <p>The maximum height of any building shall be 75 feet; provided, however, additional height may be permitted if a height variance is first secured.</p>	YES	Because the 145-foot high HRSG stacks, the tops of the HRSG units and 120-foot high auxiliary boiler stack would exceed the 75-foot height limit specified. Staff has received a resolution from the City Council stating that the City would grant a height variance, and that the only condition applied would be the landscaping that would be required for any project in the industrial area.

**VISUAL RESOURCES Table 5**  
**Proposed Project's Consistency with**  
**Local LORS Applicable to Visual Resources**

<b>LORS</b>		<b>Consistency Determination Before Mitigation / Conditions</b>	<b>Basis for Consistency</b>
<b>Source</b>	<b>Policy and Strategy Descriptions</b>		
City of San Joaquin Zoning Ordinance	<p><b>17.96.010 Landscaping</b></p> <p>The following standards shall apply to all new development occurring in the City:</p> <p>Native tree plantings or vegetation consistent with zone 7 of the Western Garden Sunset Book shall be the recommended species type in all landscape designs. The minimum tree size shall be a fifteen-gallon planting.</p> <p>The number and spacing of trees for each landscaping plan will vary; however, as a general standard one fifteen-gallon tree shall be planted for every twenty-five feet of frontage along a street.</p> <p>All landscapes shall be provided with an appropriate irrigation system and maintained to an acceptable community level. Prior to final occupancy, the developer of a new building or use that requires a site plan shall provide the City a one-year landscaping maintenance agreement that is applicable to the new building or use.</p> <p>Landscape planters shall be surrounded with a six-inch high concrete curb or similar type barrier to protect the landscaping from foot and automobile traffic.</p>	YES	<p>The conceptual landscape plan that has been developed for the project is consistent with the objectives of these guidelines, but varies in some details from the zoning ordinance's standards for commercial areas because the project site is much larger than the typical industrial site, and is at the City's interface with the surrounding agricultural landscape, where some of these requirements are not necessarily appropriate. Along Springfield Avenue trees will be planted in clusters rather than 25 feet on center, but the total number of trees would be greater than required by the ordinance.</p> <p>Condition of Certification <b>VIS-2</b> would ensure the irrigation and landscaping maintenance agreement requirements.</p> <p>Any use of landscape planters will be part of the final landscape plan and required to conform to this policy.</p>

**VISUAL RESOURCES Table 5**  
**Proposed Project's Consistency with**  
**Local LORS Applicable to Visual Resources**

<b>LORS</b>		<b>Consistency Determination Before Mitigation / Conditions</b>	<b>Basis for Consistency</b>
<b>Source</b>	<b>Policy and Strategy Descriptions</b>		
Fresno County General Plan	<b>Public facilities and Services</b> PF-J.2: The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.	YES	Due to the underground placement of the gas line and the restoration of the surface ground to its original condition, there would be no lasting visual effects. The gas metering station would be low to the ground, and would be given color treatment and landscaping that would cause it to blend into its setting. The two new transmission lines would be very short, .5 mile long, their dark gray color would not contrast highly with the blue sky background, and they would be located in an area where the landscape is already dominated visually by a transmission line and substation.
Fresno County General Plan	Open Space and Conservation Goal OS-K: To conserve, protect, and maintain the scenic quality of Fresno County and discourage development that degrades areas of scenic quality.	YES	The project elements in the County, described above, would not have a lasting visual effect.
Fresno County General Plan	OS-K.1: The County shall encourage the preservation of outstanding scenic views, panoramas, and vistas wherever possible. Methods to achieve this may include encouraging private property owners to enter into open space easements for designated scenic areas.	YES	The project elements in the County, described above, would not have a lasting visual effect.
Fresno County Zoning Ordinance	Exclusive Agriculture (AE) zone	YES	The project's linear facilities and gas metering station would fall within the AE zone. There are no specific aesthetic guidelines that would apply to pipelines or the gas metering station. The gas metering station would meet all height and setback requirements for this zone.

## RESPONSES TO AGENCY AND PUBLIC COMMENTS

There have been no written comments from other agencies or the public regarding the impact of this project on visual resources. At the March 7, 2002 public workshop, City representatives requested that a City-appointed committee be involved in the development of the project's landscaping plan. Condition **VIS-2** provides for this request.

## CONCLUSIONS AND RECOMMENDATION

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### CONCLUSIONS

The project as proposed has the potential to cause significant adverse visual impacts. The project structures would cause significant visual impacts in the view areas represented by KOPs 1, 2, and 3, as well as to some residents in the vicinity of two view points identified by Commission staff. The onsite and offsite landscaping, site design, and treatment plan components offered by the Applicant, along with the staff's proposed conditions of certification would reduce these impacts to less than significant levels. Construction and operational night lighting has the potential to cause significant visual impacts. The Applicant has proposed several mitigation measures for lighting and glare. Staff's proposed conditions of certification would ensure that lighting and glare impacts would be less than significant.

Visible plumes occurring during high contrast hours from the cooling tower, HRSG, and auxiliary boiler are predicted to occur at a frequency of less than 10 percent of the seasonal daylight hours from November through April when there is no fog or rain. At such low frequencies, visible water vapor plumes would not be a significant visual impact to travelers on nearby roads or to City of San Joaquin residents.

### RECOMMENDATION

If the Energy Commission decides to approve the project, staff recommends that the Commission adopt the following conditions of certification.

### PROPOSED CONDITIONS OF CERTIFICATION

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**VIS-1** To mitigate adequately visual impacts of project construction, the construction laydown area shall be set back 200 feet from Colorado Avenue. Chain link fencing with opaque, solid slats or other screening material shall be installed on the Colorado Avenue and Manning Avenue sides of the laydown area. All staging, material, and equipment storage areas, where visible from public rights-of-way, shall be visually screened by fencing with opaque slats. All evidence of construction activities, including ground disturbance due to staging and storage areas, shall be removed and remediated upon completion of construction.

The project owner shall submit a plan for screening construction activities at the site and staging, material, and equipment storage areas, and restoring the surface conditions of any rights-of-way disturbed during construction of the transmission line and underground pipelines. The plan shall describe the gas and water supply route. The plan shall include grading to the original grade and contouring and re-vegetation of the rights-of-way.

The project owner shall not implement the plan until receiving written approval of the submittal from the California Energy Commission Compliance Project Manager (CPM).

**Verification:** At least 60 days prior to the start of site mobilization or ground disturbance, whichever occurs first, the project owner shall submit the plan to the CPM for review and approval. If the CPM notifies the project owner that any revisions of the plan are needed, the project owner shall submit to the CPM a revised plan within 30 days of receiving that notification.

The project owner shall notify the CPM within seven days after installing the screening that the screening is ready for inspection. The project owner shall notify the CPM within seven days after completing the surface restoration that the areas disturbed during construction are ready for inspection.

**VIS-2** The project owner shall prepare and implement a perimeter and offsite landscape plan to screen views of the power plant. Landscaping shall consist of a mix of predominantly evergreen trees, shrubs, and groundcovers and shall include fast-growing evergreen tree and shrub species to ensure that maximum screening is achieved as quickly as possible and year-round. The gas metering station shall be given landscaping that will cause it to blend into its setting. Suitable irrigation shall be installed to ensure survival of the plantings. Landscaping shall be installed consistent with the City of San Joaquin zoning ordinance.

**Verification:** At least 60 days prior to start of site mobilization or ground disturbance, whichever occurs first, the project owner shall submit the landscape plan to the City of San Joaquin for review and comment and to the CPM for review and approval. The plan shall include, but not be limited to:

A. A detailed topographic landscape plan that includes:

1. Specification of the locations proposed for each type of landscaping, and the proposed spacing of plants;
2. A berm varying in height from 5 to 7 feet, with shrubs and groundcover, extending along the perimeter of the project site from the cooling tower southeast to the corner of the site then west to the switchyard;
3. Three rows of palm trees extending along the perimeter of the project site from the cooling tower southeast to the corner of the site then west to the switchyard. The trees shall be farther from the project boundary than the berm specified in item 2 above. Each row of palm trees shall be of a different variety so that the rows of trees will be of different heights both at planting and at maturity to increase screening. The dimensions of the palm trees shall be as follows:
  - a) One row of trees that at planting are approximately 25 feet tall and are expected to grow at least ten more feet;
  - b) One row of trees that at planting are approximately 15 feet tall and at maturity are expected to attain a height of approximately 25 feet; and

- c) One row of trees that at planting are approximately 5 feet tall and at maturity are expected to attain a height of approximately 10 feet;
- 4. A row of fast-growing tall broadleaf evergreen trees extending along the perimeter of the project site from the cooling tower southeast to the corner of the site then west to the switchyard. This row of trees shall be farther from the project boundary than the palm trees specified in item 3 above.
- 5. Two offset rows of tall fast-growing broadleaf evergreen trees extending along the perimeter of the project site from the northern corner of the site to the southeast end of the cooling tower;
- 6. Two offset rows of fast-growing broadleaf evergreen trees along the east side of Colusa Boulevard from Springfield Avenue north for approximately ¼ mile.
- 7. Two offset rows of fast-growing tall broadleaf evergreen trees around the perimeter of the northern corner of the project site;
- 8. Along the south side of Manning Avenue between Colorado Avenue and Arizona Avenue:
  - a) One row of palm trees that at planting are approximately 15 feet tall and at maturity attain a height of approximately 25 feet ;
  - b) One row of palm trees that at planting are approximately 5 feet tall and at maturity attain a height of approximately 15 feet; and
  - c) One row of palm trees that at planting are approximately 5 feet tall and at maturity attain a height of approximately 10 feet;
- 9. Along the north side of Manning Avenue between Colorado Avenue and Arizona Avenue: one row of palm trees that at planting are approximately 15 feet tall and at maturity attain a height of approximately 25 feet ;
- 10. Two offset rows of fast-growing tall broadleaf evergreen trees along the northern half of the western boundary of the project site;
- B. A list and description of potential plant species, including their growth rate, mature size, mature shape, and proposed size at installation. The species shall be selected with the objectives of satisfying the screening requirements and providing the widest possible range of species from which to choose.
- C. A discussion of the suitability of each plant species for the site conditions and mitigation objectives, including evidence from a qualified professional arborist

that the species selected are both viable for the proposed location and available;

D. A detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as feasible in coordination with project construction;

E. An irrigation plan at the same scale as the topographic landscape plan;

F. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

G. A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

The project owner shall complete installation of the landscaping prior to the start of commercial operation. The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting and irrigation system are ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in each Annual Compliance Report.

The fifth Annual Compliance Report shall include documentation that demonstrates that the landscaping mitigates project impact to less than significant levels. If the CPM determines that impacts are still significant, within 30 days of the Commission request the project owner shall submit a revised landscaping plan demonstrating sufficient mitigation to the City for review and comment and to the CPM for review and approval. Upon approval the project owner shall implement the plan within 90 days. The project owner shall notify the CPM within seven days after completing installation of the supplemental landscape screening that it is ready for inspection.

**VIS-3** Prior to first turbine roll, the project owner shall treat the surfaces of all project structures and buildings visible to the public such that their colors minimize visual intrusion and contrast by blending with the landscape; their surfaces do not create glare; and they are consistent with local laws, ordinances, regulations, and standards. The project owner shall submit for CPM review and approval, a specific treatment plan whose proper implementation will satisfy these requirements. The treatment plan shall include:

- a) Specification, and 11" x 17" color simulations at life size scale, of the treatment proposed for use on project structures, including structures treated during manufacture;

- b) A list of each major project structure, building, tank, transmission line tower and/or pole, and fencing/walls specifying the color(s) and finish proposed for each (colors must be identified by name and by vendor brand or a universal designation);
- c) Two sets of brochures and/or color chips for each proposed color;
- d) One-foot square samples of each proposed treatment and color on each pre-fabricated/colored material that would be visible to the public;
- e) A detailed schedule for completion of the treatment; and
- f) A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated on site, until the project owner receives notification of approval of the treatment plan by the CPM.

**Verification:** The project owner shall submit its proposed treatment plan at least 90 days prior to ordering the first structures that are color treated during manufacture. If a revision is required, the project owner shall provide the CPM with a revised plan within 30 days of receiving notification that revisions are needed.

Prior to first turbine roll, the project owner shall notify the CPM that all buildings and structures are ready for inspection. The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

**VIS-4** The project owner shall design and install all permanent lighting such that light bulbs and reflectors are not visible from public viewing areas; lighting does not cause reflected glare; and illumination of the project, the vicinity, and the nighttime sky is minimized. To meet these requirements the project owner shall ensure that:

- a) Lighting shall be designed so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of the lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary;
- b) All lighting shall be of minimum necessary brightness consistent with worker safety;
- c) High illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have switches or motion detectors to light the area only when occupied;
- d) A lighting complaint resolution form (following the general format of that in Attachment 1) shall be used by plant operations to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

**Verification:** At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and comment written documentation describing the lighting control measures and fixtures, hoods, shields proposed for use, and incorporate the CPM's comments in lighting equipment orders.

Prior to first turbine roll, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed.

The project owner shall report any complaints about permanent lighting and provide documentation of resolution in the Annual Compliance Report, accompanied by any lighting complaint resolution forms for that year.

**VIS-5** The project owner shall ensure that lighting for construction of the power plant is used in a manner that minimizes potential night lighting impacts, as follows:

- a) All lighting shall be of minimum necessary brightness consistent with worker safety.
- b) All fixed position lighting shall be shielded, hooded, and directed downward to minimize backscatter to the night sky and direct light trespass (direct lighting extending outside the boundaries of the construction area).
- c) Wherever feasible and safe, lighting shall be kept off when not in use and motion detectors shall be employed.
- d) A lighting complaint resolution form (following the general format of that in Attachment 1) shall be maintained by plant construction management, to record all lighting complaints received and to document the resolution of that complaint.

**Verification:** Within seven days after the first use of construction lighting, the project owner shall notify the CPM that the lighting is ready for inspection.

If the CPM notifies the project owner that modifications to the lighting are needed to minimize impacts, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

The project owner shall report any lighting complaints and documentation of resolution in the Monthly Compliance Report, accompanied by any lighting complaint resolution forms for that month.

**VIS-6** The project owner shall design project signs using non-reflective materials and unobtrusive colors. The project owner shall ensure that signs comply with the applicable City of San Joaquin zoning requirements that relate to visual

resources. The design of any signs required by safety regulations shall conform to the criteria established by those regulations.

The project owner shall submit a signage plan for the project to the City of San Joaquin for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

**Verification:** At least 60 days prior to installing signage, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the plan are needed, within 30 days of receiving that notification the project owner shall prepare and submit to the CPM a revised submittal. The project owner shall notify the CPM within seven days after completing installation of the signage that they are ready for inspection.

**VIS-7** The project owner shall ensure that the SJVEC cooling tower is designed so that the plume frequency will not increase from the design as certified.

**Verification:** At least 30 days prior to ordering the cooling tower, the project owner shall provide to the CPM for review and approval the final design specifications of the cooling tower, including estimates of the design data shown in Table Plume 1. The project owner shall not order the cooling tower until notified by the CPM that the design has been approved.

**Table Plume 1 - Design Data for Cooling Tower**

Parameter		Cooling Tower Design Parameters				
Number of Cells		16 (1 x 16)				
Stack Height		17.98 meters				
Cell Stack Diameter		10.67 meters				
Tower Housing Length		292.6 meters				
Tower Housing Width		21.03 meters				
		Duct Firing		Baseload		
Maximum Design Inlet Air Flow Rate (kg/s)		17,000		16,673		
Maximum Heat Rejection Rate (MW)		813		519		
Design Liquid to Gas (L/G) Mass Ratio		1.0				
	Case A	Case B	Case C	Case D	Case E	Case F
Ambient Temp	32 °F	32 °F	61 °F	61 °F	100 °F	100 °F
Ambient RH	90%	90%	54%	54%	26%	26%
Duct Burners	Off	Off	Off	Off	Off	On
Inlet Fogging	Off	Off	On	On	On	On
Power Augmentation	Off	On	Off	On	Off	On
Cells in Operation	16	16	16	16	16	16
Exhaust Gas Temp	61 °F	61 °F	74 °F	74 °F	86 °F	93 °F

Source: AFC (SJVEC 2001a, page 8.11-15) and DR #138-139 (SJVEC 2002a, page VIS138-4, Table 1).

The necessary design/vendor parameters of the cooling tower shall include: all parameters as listed in the table above, and the fogging frequency curve for the cooling tower for duct firing and non-duct firing operations.

The project owner shall provide a written certification in each Annual Compliance Report that the cooling tower visible plume frequency has been consistent with the design as certified. If determined to be necessary to ensure operational compliance, based on complaints received or other physical evidence of potential non-compliant

operation, the project owner shall monitor the cooling tower operating parameters in a manner and for a period as specified by the CPM. For each period that the cooling tower operation monitoring is required, the project owner shall provide to the CPM the cooling tower operating data within 30 days of the end of the monitoring period. The project owner shall include with this operating data an analysis of compliance and shall provide proposed remedial actions if compliance cannot be demonstrated.

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# **RESPONSE TO PUBLIC AND AGENCY COMMENTS**

Below are the comments received from two local governmental agencies on the Staff Assessment (SA) of the San Joaquin Valley Energy Center (SJVEC) Application for Certification. The comments are answered directly below, and one is also addressed in the applicable technical section in the Corrections and Additions Chapter of this Addendum. Comments were also received from the Applicant, many of which are responded to in the in the following section, "Response to Applicant Comments." No comments on the SA were received from the general public.

## **RESPONSE TO AGENCY COMMENTS**

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### **FRESNO COUNTY DEPARTMENT OF COMMUNITY HEALTH, ENVIRONMENTAL HEALTH SYSTEM**

The Fresno County Department of Community Health offered the following comment:

The Noise section of the Executive Summary states, "Staff and the Applicant were unable to reach agreement on the significance criteria for noise impacts, nor the suitable mitigation for addressing those impacts." This Department concurs with the Staff Assessment of the potential noise impacts to nearby noise sensitive receivers, both in the unincorporated area of Fresno County and the City of San Joaquin, including the recommended mitigation measures which should ensure compliance with the applicable city and county noise ordinances.

As a point of clarification, the location of the noise source determines the regulatory jurisdiction. If noise-related complaints are generated by the project, those complaints will be directed to the City of San Joaquin for appropriate follow-up and enforcement, regardless of the location of the noise sensitive receiver.

Staff's response: The County notes that if noise-related complaints are generated by the project, such complaints will be directed to the City of San Joaquin for appropriate follow-up and enforcement. The County's comment is noted.

### **FRESNO COUNTY PLANNING & RESOURCE MANAGEMENT DEPARTMENT**

The Fresno County Planning & Resource Management Department, Development Services Division, offered the following comment:

A portion of the project is within the County of Fresno and a conditional use permit will be necessary for the construction of the new pipeline to the plant.

Staff's response: Staff notes that in Fresno County linear facilities generally require a conditional use permit (CUP) and related findings by the County planning staff. However, since the Commission is the lead agency for the SJVEC project, the Commission will make these findings. The Land Use section of the Staff Assessment has been updated adding language concerning the Fresno County Zoning Ordinances addressing conditional use permits, and makes conclusions concerning the required Staff findings that the project meets all local zoning requirements. Please see the **Land**

**Use** section of the Corrections and Additions chapter of this addendum for the specific changes made to the Staff Assessment to address this comment.

## **RESPONSE TO PUBLIC COMMENTS (NON-INTERVENORS)**

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### **WRITTEN COMMENTS**

None

### **ORAL COMMENTS**

None

## **RESPONSE TO APPLICANT COMMENTS**

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Below are the responses to the substantive comments on the SJVEC SA submitted by the Applicant on August 15, 2002. Responses to the Applicant's comments that require changes to the SA also appear in Chapter 3 of this Addendum, entitled "Changes or Additions to the Staff Assessment." The responses in general reply to those Applicant comments that address Staff's conclusions or conditions of compliance made in the SA, as well as those addressing incorrect or outdated data. The responses to the Applicant's comments are not comprehensive in that many comments by the Applicant were not addressed, though Staff is prepared to discuss all the Applicant's comments during hearings, if needed.

### **BIOLOGICAL RESOURCES**

1. Applicant's Comment-Page 4.2-3: Table 1, Sensitive Species Known to Occur in the Project Vicinity: The status column for sensitive wildlife is blank. Please insert status from AFC Table 8.2-3.

Staff's Response: The status column formatting was fixed to show the status.

2. Applicant's Comment-Page 4.2-3: Change "Phrynosoma coronatum frontale" to "Gambelia sila."

Staff's Response: The scientific name was changed to Gambelia sila.

3. Applicant's Comment-Page 4.2-11, paragraph 1: Air Quality Impacts to Biological Resources. At the end of the 1st paragraph, the year of the reference should be changed to Weiss, 1999.

Staff's Response: The citation was changed from Weiss, 1998, to Weiss, 1999.

4. Applicant's Comment-Page 4.2-16, Condition of Certification BIO-2: Revise item number 4 to read: "Prior to project site perimeter fencing installation, inspect active construction areas where animals may have become trapped. Inspect for

the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Inspect areas with high vehicle activity (parking lots) for animals in harms way....” Statements dictating inspection times are not necessary. The Project Biological Resource Specialist must specify in the BRMIMP (with CEC approval) when and where biological resource monitoring activities will be required.

Staff’s Response: The change was made to Condition of Certification BIO-2, included removing daily inspection mandates. The timing of monitoring will be developed through the BRMIMP development and approval process by the project owners Designated Biologist, and in consultation with CEC staff.

5. Applicant’s Comment-Page 4.2-17, Condition of Certification BIO-4: The Applicant requests that the WEAP training be provided by video (as allowed in Condition of Certification CUL-3). The video training could be provided by the Designated Biologist, or another person approved by the CEC.

Staff’s Response: Condition of Certification BIO-4 (Item a) was changed to allow a video training presentation as an option for WEAP training.

6. Applicant’s Comment-Page 4.2-19, Condition of Certification BIO-5, Item k: Please clarify whether aerial photographs must be provided for all areas to be disturbed (including linears), or just the areas of higher impact, such as the plant site.

Staff’s Response: Condition of Certification BIO-5 (Item k) was deleted because Staff does not anticipate the need for additional aerial photographs.

## LAND USE

1. Applicant’s Comment-Page 5.4-17, **LAND-1**. Please provide an explanation of the significant impact the mitigation measure LAND-1 is designed to reduce to a level of less than significant

Staff’s Response: In addition to mitigating for significant environmental impacts, the Warren-Alquist Act (PRC Section 25523(a)) authorizes the Commission to condition its power plant certifications on reasonable terms and conditions "in order to protect environmental quality and assure public health and safety".

The purpose of condition LAND-1 is two-fold: First, it would ensure that, consistent with good planning and zoning practices, the plant and its ancillary facilities, including setbacks around them, will be located on one parcel under one ownership so that no portion of the land on which they are located could be sold off without government approval during the lifetime of the project. Second, by clearly defining the boundaries of the adjacent parcels, this condition would help establish the extent of development that would be expected by its owners to be approved by the City of San Joaquin under the existing zoning. This could also help avoid potential adverse environmental impacts

resulting from conflicts with new or existing adjacent industrial or commercial development.

## **SOIL & WATER RESOURCES**

1. Applicant's Comment- Page 4.19-14: The applicant indicates that "Item a" on the Environmental Checklist indicates that "water quality" may be violated without mitigation. The applicant then states that the impact discussion on Page 4.9-15 does not note any violations, but rather notes that the reclaimed water will meet Title 22 requirements. The applicant is concerned why no COC's or mitigation and applicable mitigation measures have been addressed.

Staff's Response: Staff adopted Condition of Certification # 5 to ensure that the applicant would secure a User Agreement Permit from the City of Fresno. Because The City of Fresno will be receiving Waste Discharge Requirements from the CVRWQCB, which supports the Master Recycling Permit for the WWTF, the User Agreement Permit would allow the City of Fresno to regulate it's effluent to supply the SJVEC.

2. Applicant's Comment-Page 4.9-18, paragraph 4, sentence 2: The applicant is questioning why a SWPPP is needed for the Industrial Activity if no NPDES permit is required.

Staff's Response: Please note that no final design specifications have been received for the SJVEC site as well as detailed drawings and calculations for the retention pond. Also, staff has no knowledge how any non-stormwater issues will be handled as well as overall water quality provisions for the site. The CVRWQCB issued a letter dated July 29, 2002. The letter indicated that although no permit would be required, the applicant is required to develop a SWPPP for Industrial Activities proving that the storm water retention basin will be capable of containing all the stormwater and runoff from the site. Energy Commission staff is further requesting that this plan be submitted to the CPM for review and approval prior to initiating operational activities. Also, staff highly recommends that the applicant review the requirements for developing a complete SWPPP on the SWRCB's website ([www.swrcb.ca.gov/stormwtr/index.html](http://www.swrcb.ca.gov/stormwtr/index.html)).

3. Applicant's Comment-Page 4.9-19, Item g): The applicant noted that staff did not include a discussion in the SA regarding a Phase II ESA that was conducted March 29, 2002.

Staff's Response: Staff reviewed the Waste Management section of the SA and has revised the text to reflect the Phase II ESA; please see the Corrections and Additions Chapter of this document.

4. Applicant's Comment-Pages 4.9-22 through 24: The applicant noted that the Verification style was missing in the Conditions of Certification section of the SA.

Response: Staff has added the Verification style to each Condition of Certification; please see the Corrections and Additions Chapter of this document.

5. Applicant's Comment-Page 4.9-23, Soil & Water 3: The applicant questions why an NPDES permit is required for Industrial Activity if all stormwater will be retained onsite.

Response: Please refer to the Response to Comment #2 above. Also, staff has revised the Verification under Condition 3 to only reflect the submittal of a SWPPP for review and approval and to omit the request for a Notice of Intent; please see the Corrections and Additions Chapter of this document.

**APPENDIX A**  
**RECONDUCTORING PROJECT IMPACT ANALYSIS**



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# **APPENDIX TO TRANSMISSION SYSTEM ENGINEERING RECONDUCTORING PROJECT IMPACT ANALYSIS**

Testimony of Matt Trask

## **1 INTRODUCTION AND PURPOSE**

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Energy Commission Staff has prepared this appendix to the Transmission System Engineering section of the Staff Assessment for the San Joaquin Valley Energy Center (SJVEC) project in order to examine the potential indirect impacts of the project associated with future reconductoring of transmission lines. Reconductoring involves replacing the cables on one or more transmission line segments with new cables that, because of improvements in the metallurgy of the conductors, allow a large increase in the current-carrying capacity of the segment, without increasing the weight or size of the cable. Reconductoring also may involve modifying or even replacing one or more of the transmission line towers because the new conductors have different sag characteristics, which may require raising the height of certain towers.

Though the Applicant contends that reconductoring will not be necessary to meet its business goals for developing the SJVEC, Staff's analysis of the potential effects on the transmission system caused by operation of the proposed facility shows that reconductoring of the Helm-Panoche and Helm-Kearney 230 kV transmission lines are reasonably foreseeable events. Because of this, and the requirement under the California Environmental Quality Act (CEQA) to examine foreseeable subsequent projects that result from the project, Staff has analyzed the potential impacts of reconductoring as it may pertain to the SJVEC. Reconductoring will be a separate project with a different applicant before a different agency, and will be subject to that agency's CEQA analysis. A more general level of analysis is thus appropriate for this Staff Assessment.

The actual need for reconductoring will be finally determined after PG&E has completed the Final Design Study or Cost Study for the Generator Facility Interconnection Agreement for the SJVEC project. At that time, presuming reconductoring is actually needed, PG&E would apply to the California Public Utilities Commission (CPUC) for authority to implement the reconductoring project, and to recover the cost of the reconductoring from Calpine and/or PG&E ratepayers. Depending upon the complexity of the reconductoring work, PG&E may prepare a Proponent's Environmental Assessment (PEA), in which PG&E would discuss the design and construction procedures for the reconductoring project, examine potential impacts to the environmental and public health that would be caused by the reconductoring, and propose mitigation that would either eliminate, avoid, reduce to a less-than-significant level, or compensate for any identified impact.

The CPUC would use the PEA to focus quickly on any impacts of the project that may be of concern. If there is no possibility that the project may have a significant adverse environmental impact, the CPUC may find the project exempt from CEQA. Otherwise, the CPUC may use the PEA in preparing an Initial Study, which it would use to determine whether to prepare a Negative Declaration or an Environmental

Impact Report. However, the CPUC also has authority to waive the CEQA review even without the submittal of a PEA from PG&E, if the work proposed is non-controversial and presents little possibility of significant impact. Because the reconductoring process is so well understood, and because the reconductoring process allows sufficient flexibility to avoid any environmental impacts in the vast majority of cases, the CPUC generally exempts reconductoring projects from CEQA review.

The purpose of the CEC's reconductoring analysis is to inform the Energy Commission, interested parties and the general public of the potential indirect environmental and public health effects caused by the approval of the SJVEC project. This analysis examines the nature and scope of the probable impacts of reconductoring, should it occur, and measures for mitigating these impacts to a less-than-significant level.

The analysis is based upon information supplied by the Applicant, as well as on information gathered from PG&E and other sources. This analysis describes the process of reconductoring and the types of environmental impacts that might occur as a result of reconductoring. It also discusses specific aspects of the reconductoring project that Staff has determined would likely occur as a result of approval of the project, such as its location and some likely places for pull and tensioning sites, and staging yards.

Finally, this analysis draws conclusions as to the likelihood that the reconductoring could be accomplished with no significant environmental impacts, and identifies mitigation measures that could be enacted to ensure the reconductoring project would not cause significant impacts. Because the potential for impacts in several technical areas are essentially non-existent, several of the areas normally studied in a Staff Assessment have been eliminated from this analysis. These are: Air Quality, Facility Design, Hazardous Materials Management, Power Plant Efficiency, Power Plant Reliability, Worker Safety, Socioeconomic Resources, and Waste Management. Impacts to those areas, if any, would be similar but likely much less in severity to those related to construction of the project and its associated linear projects; and the construction-related analysis and proposed mitigation measures in those sections of the Staff Assessment for the SJVEC provides a general understanding of the potential impacts in those areas that could possibly, but not likely, be caused by a reconductoring project.

## **2 CONCEPTUAL DESIGN OF RECONDUCTORING**

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This Chapter identifies the specific transmission line segments that Staff believes will be reconducted as a result of licensing the SJVEC, and provides an overview review of the reconductoring process on a general level. It describes the basic work involved in reconductoring a transmission line segment, as well as specific designs (when known) for the reconductoring project that is a reasonably foreseeable result of the approval of the project.

### **2.1 DESCRIPTION OF THE PROPOSED PROJECT(S)**

Energy Commission Staff have determined that construction and operation of the proposed SJVEC would likely trigger the need to reconductor three lines in two corridors. The three lines are the Project to Panoche line, the Helm to Panoche line, and the Project to McMullin to Kearney line, all of which are rated at 230 kV. The Helm-Panoche and Project to Panoche transmission line segments run in a common corridor that extends westward and northwestward from the Helm Substation to the Panoche Substation. As the name implies, the Project to McMullin to Kearney line runs eastward from the Helm substation and terminates at the Kearney substation.

The Helm to Panoche transmission line carries a single 230 kV electrical circuit between the Helm Substation, located near the City of San Joaquin, Fresno County and the Panoche Substation, located in Panoche, Fresno County, California, a distance of 19.6 miles. The line begins at the Helm Substation and runs westward across cultivated fields parallel to Manning Avenue, before crossing the San Luis Canal of the California Aqueduct. Approximately 2.5 miles west of the California Aqueduct, the line turns northwestward and continues across orchard lands and agricultural fields for approximately 4.6 miles before reaching the Panoche substation. The total length of the Panoche-Helm 230 kV line is approximately 25 miles.

The Helm-Kearney transmission line carries a single 230 kV circuit. It runs directly east for 15.8 miles, crossing cultivated agricultural fields as well as the James Bypass just past Raisin City, before turning north for 7.0 miles and the east for 0.8 miles. The final 2 miles crosses the wastewater treatment plant ponds for the Fresno Wastewater Plant.

Temporary staging areas for equipment and materials storage are required for any reconductoring project. The Helm-Panoche and Helm-Kearney lines will each require a 1 acre staging yard at each of their terminal ends, plus an additional staging area located at the SJVEC site near the Helm substation. Marshalling yards would likely be located on agricultural fields next to the Panoche and Kearney Substations, and would be rented or leased for the construction period. Each reconductoring project would take approximately 4 to 5 months, overall. The reconductoring work would probably occur during times of relatively low electrical demand to protect system reliability while the lines are out of commission. This may mean that crews would work through two seasons to accomplish all the reconductoring needed for the SJVEC project.

The project area consists of primarily of agricultural land uses. There are no cities along the transmission line, but the number of proximate farm houses, residences and landscape habitat types increases east of McMullin substation. Similarly the line crosses through an extensive area of industrial development on the south side of Kearney substation, as it crosses the Fresno Wastewater Treatment Plant ponds. The transmission line routes are accessible via agricultural roads that are generally perpendicular to main paved roads such as Manning Avenue.

Though not anticipated at this time, the reconductoring projects may also require modifying the transmission towers, which may require some additional work on the concrete foundation for one or more towers. The need for foundation work would be determined during inspections conducted by PG&E as part of forming the engineering plans for the reconductoring project. Foundation work could range from patching minor cracks in the concrete, to complete replacement of the foundation, which would require excavation work around the base of the tower. For the vast majority of reconductoring projects, however, excavation work near the towers is not needed.

## **2.2 CONSTRUCTION METHODS**

In general, reconductoring is accomplished by disconnecting the old line and using it like a rope to pull the new line through the temporary pulleys, called “travelers” or “sheave blocks,” that are mounted on each tower, until it reaches the other end. Workers access each tower by truck in order to place the temporary pulleys on each tower and route the cables through them. If the old line is not in good enough condition to be used to pull in the new line, it would be used to pull a carrier cable, or “sock line,” through the pulleys to the end of the segment to be replaced; the sock line would then be used to pull the new conductors. Depending on the nature of the project, a helicopter can be used to string the sock line and transport workers and materials to the structures. Helicopter reconductoring methods have proven highly effective where access is difficult or in areas where impacts from access create concern. Helicopter work is not anticipated for the reconductoring projects identified above, as the topography is generally flat and the land previously disturbed.

The work involves setting up two work crews on either end of the segment that is being replaced. Each crew generally consists of two large tractor/trailer units, which either feed out the new line or wind in the old line on spools mounted on the trailers, plus various machinery such as cranes and two or three utility trucks carrying tools, other materials, and workers, for a total of 8 to 10 trucks and about 20 workers involved in the work at any one time. One crew sets up at a “pull site” near a tower at one end of the pull, and the other at a “tensioning site” near a tower at the other end of the pull. The tensioning crew would employ a special tensioner truck, which is essentially a large drum winch that is used to put back tension on the line being pulled. Each pull generally is limited to about 2-3 miles, and the crews generally pull three cables (one three-phased circuit) at once. Each pull station requires a work area of about 100' by 200' and each tensioning station requires a work area of about 100' by 300'.

The tensioning site crew either climbs or uses a truck-mounted aerial bucket (also called a “cherry-picker”) to access the tower, disconnect the old conductors, and attach them through the tensioner truck to the new conductor on spools on the large trucks. The pull site crew also climbs the tower and disconnects the lines, and attaches them to the spools in the large trucks below the tower. During this time, other crews set up temporary structures across roads and other potentially inhabited areas to protect those areas in the unlikely event that a conductor breaks and the line falls to the ground.

Once all protective structures are in place and the pull and tensioning sites are ready, the pull crew then begins to carefully wind in the old lines onto the spools on the trucks, thus pulling the new lines through the pulleys on the towers along the segment being replaced, while the tensioning crew keeps the lines taught, preventing them from sagging to the ground or other objects in the right-of-way. Once the new lines are in place, the crews once again access each tower, disconnect the new lines from the pulleys and install them in permanent insulator clamps.

The crews usually pull the new conductors through two or more miles of transmission towers at a time. Because the potential for environmental impact is generally nonexistent between the pull and tensioning sites, this analysis focuses particularly on examining potential effects at the likely pulling and tensioning sites, as well as at other locations that could be disturbed by truck movement, such as near towers that may require modification as part of the reconductoring. Activities between the pull and tensioning sites are generally restricted to 1) accessing the towers (either by climbing or using a truck-mounted aerial bucket) to place the pulleys and to remove the conductor from the pulleys and refasten it once stringing is completed; and 2) work on the tower structure itself to repair or replace spars that are damaged, or to replace insulators.

Though determining now precisely where the pull and tensioning sites would be located is not possible, they are generally sited at “angle” towers, which are located where the line makes a change in direction of more than 10 degrees. Pulling the old lines and reeling out the new conductors is easier at these locations because the pulling and tensioning equipment can be arranged in line with the transmission line. Conversely, the crews try to avoid pulling the line through one or more angle towers because the conductors cannot be efficiently pulled through such an angle. Pulling and tensioning can also take place at “deadend” sites, which are towers where the transmission line is physically connected to the tower, rather than merely passing through the insulator clamps, and in general is where one spool of cable is spliced to the next spool. Deadend sites are generally located at angle towers, but also can be located at towers that are in-line with the route, rather than at an angle to the route. Deadend towers have significant structural strength and resist the forces of pulling. The locations of angle and deadend towers on the Helm-Panoche and Helm-McMullin-Kearney lines are not known at this time. The exact locations the crews will work from would not be known until PG&E draws up final engineering plans for the reconductoring project.

The work crews likely will have a great deal of flexibility in choosing the locations of the pull and tension sites, as it may be possible to pull through the angles on some of these towers (less than 30 degrees). Because of the flexibility in locating work sites, crews can generally select sites that either avoid creating impacts altogether, or create less-than-significant impacts with certain mitigation measures enacted. All likely pull or tensioning sites are accessible from existing roads, and essentially every tower in the two corridors above is located on highly disturbed agricultural land.

The work crews would also set up equipment at some towers that may be modified as part of the reconductoring project. Because the new conductors may sag closer to the ground during hot days when the lines are fully loaded, some towers may need to be raised, perhaps as much as 16.5 feet in height. This can be done through one of three methods: a “top cage” extension, where additional structure is added to the top of the tower to raise its top to the required level; a “waist cage” extension, where the top half of the tower is separated from the bottom half at about its mid-level, additional structure is inserted, and the top is replaced onto the new part of the structure; and a “base cage” extension, where the tower is separated from its concrete base, new structure is installed on the base, and then the tower is placed back on top of the new structure.

According to PG&E, these work areas needed to modify the height of towers would be similar in size to those for the pulling and tensioning sites. The equipment needed would consist of a truck-mounted crane capable of lifting the existing tower off its base, plus three or four smaller support vehicles. Workers would attach the crane to the tower, then separate the portion that would be elevated, and pull that portion up to provide clearance for the new structure. The new structure is welded and/or bolted in place, and the existing structure is then lowered back onto the new structure and welded and/or bolted in place. In most cases, the existing conductors would not have to be removed from the tower while it is modified.

Also during the reconductoring process, the work crews may replace all the insulators on all transmission towers on the line. This work usually involves accessing the tower with a truck-mounted aerial bucket, or by climbing, removing the old insulator strings, and installing new ones. The new insulators are delivered and held in place by the aerial bucket and or rigging attached to the tower, or, for towers that cannot be access by truck, by helicopter. The towers will also be inspected for corrosion prior to reconductoring and, if necessary, will be repaired. Repairs can include corrosion removal by mechanical means, reglvanizing and repainting.

Workers would pull in all three new cables of each transmission circuit at the same time, over a distance of approximately 2-3 miles at a time. Workers would occupy each pull or tension site for a total of about 3 days as that part of the line segment is replaced. The workers would then move on to the next pull and tension sites and set up to replace that section of the line.

## **3 ANALYSIS OF RECONDUCTORING**

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### **3.1 BIOLOGICAL RESOURCES**

#### **Introduction**

This section provides the California Energy Commission Staff's analysis of potential impacts to biological resources that would be caused by two reconductoring projects associated with construction and operation of the San Joaquin Valley Energy Center (SJVEC). The Applicant analyzed some potentially significant environmental impacts associated with the expected reconductoring projects in Data Response Set 3, submitted on August 23, 2002 (Calpine 2002), which provides a discussion of the reconductoring process and how it could be accomplished. Potential impacts to biological resources caused by the identified reconductoring projects could occur near the construction work sites that would be established for the reconductoring. These sites include the pull and tensioning sites used to pull the new conductors onto the towers, the locations of any tower that may require modification as part of the reconductoring, and the potential sites for staging or marshalling yards. This analysis focuses on the potential impacts that could occur at those work sites, and discusses potential mitigation measures that would avoid, eliminate, reduce to a less-than-significant level or compensate for those impacts.

The actual reconductoring project, if it is needed, will be subject to approval by the California Public Utilities Commission (CPUC), and will follow CPUC guidelines to incorporate Best Management Practices and other suitable mitigation measures to help minimize or eliminate impacts to sensitive biological resources. Staff's general analysis evaluates potential impacts to state and federally listed species, state and federal species of special concern, areas of critical biological concern and, where necessary, recommends suitable mitigation measures to reduce potential impacts to insignificant levels. Staff's analysis is based on the Data Response Set No. 3 (Calpine, 2002), cited above, as well as Calpine's Application for Certification (Calpine 2001a), and Calpine's AFC Supplement, provided December 13, 2001 (Calpine 2002a).

#### **Project Description**

The Helm to Panoche transmission line begins near the City of San Joaquin, Fresno County, and ends at the Panoche Substation, located in Panoche, Fresno County, California. This line begins at the Helm Substation, and runs westward across intensively cultivated fields parallel to Manning Avenue, before crossing the San Luis Canal of the California Aqueduct. Approximately 2.5 miles west of the California Aqueduct, the line turns northwestward and continues across orchard lands and agricultural fields for approximately 4.6 miles before reaching the Panoche substation. The total length of the line Panoche – Helm 230 kV line is approximately 25 miles (Calpine, 2002).

The Helm-Kearney transmission line runs directly east from the Helm Substation for 15.8 miles, crossing intensively cultivated agricultural fields, as well as the James Bypass just past Raisin City, before turning north 7.0 miles and east 0.8 miles. The

final 2 miles crosses the wastewater treatment plant ponds for the Fresno Wastewater Treatment Plant (Calpine, 2002).

The proposed project would upgrade these lines by replacing the existing wire (conductor) with new wire. Though not anticipated at this time, the existing pole structures may also be replaced as part of the reconductoring process.

### **Impacts of Reconductoring**

The Applicant provided a biological resources impact evaluation associated with reconductoring the Helm-Panoche and Helm-Kearny 230 kV transmission lines (Calpine, 2002). The analysis provided a discussion of the location and the process for reconductoring the transmission lines.

This analysis focuses on the potential impacts that could occur as a result of the construction and operation of the proposed reconductoring project, and discusses potential mitigation measures that would avoid, eliminate, and reduce the potential impacts to a less-than-significant level. Potential impacts to biological resources during reconductoring of the transmission lines could occur at the pull and tensioning sites (used to pull the new conductors onto the towers), the tower locations (requiring modifications and/or pole replacement), and the temporary staging or marshalling yard locations.

Construction associated with the reconductoring project would likely occur at corner towers where conductor pull and tension sites and pole replacement activities are required. The equipment needed for a typical reconductoring project (e.g., large 10-wheel trucks, other vehicles, cranes and/or a helicopter) could impact biological resources. Potential impacts that could result from these activities include disturbance of habitat caused by movement of the construction equipment, disturbance of nesting activities caused by construction noise, and potential take of listed species caused by construction activities.

The biological resources evaluation and habitat maps provided (Calpine, 2002) indicate that the predominant habitat type crossed by the transmission line corridors is intensively farmed agricultural land. Other habitats intersected by the transmission lines include riparian and riparian scrub, an annual grassland area (James Bypass), three emergent wetland areas (associated with three irrigation ditches), and 20 major canals (irrigation ditch or open water features).

The specific locations and size of the temporary pull and tensioning and marshalling areas has not been determined, although it is likely that these areas would be placed in existing agricultural areas. The Helm-Panoche and Helm-Kearny transmission lines would each require a staging area that is approximately one acre in size, and would be placed at each of their terminal ends. An additional staging area would likely be placed at the Helm substation.

The biological resources evaluation indicate that several historic occurrences of special status species have been reported both within and adjacent to the transmission line corridors, including one occurrence for lesser saltscree (*Atriplex miniscula*), two occurrences for brittlescale (*Atriplex depressa*), one occurrence for

Fresno kangaroo rat (*Dipodomys nitratooides exilis*), and three occurrences for San Joaquin kit fox (*Vulpes macrotis mutica*).

Transmission line tower modification activities (e.g., pole replacement), pull-tension site activities, and establishment of temporary staging or marshalling areas could adversely impact sensitive species and/or habitats. The primary biological resources concerns associated with reconductoring the transmission lines are potential construction and operation-related impacts to sensitive species and habitats. Table 1 below lists the sensitive species that are known to occur or have the potential to occur within or near the transmission line corridor.

**BIOLOGICAL RESOURCES - Table 1**  
**Sensitive Species Known to Occur in the Project Vicinity**  
**(Calpine 2001a, Staff 2001-2)**

<b>Sensitive Plants</b>	<b>Status*</b>
Heartscale ( <i>Atriplex cordulata</i> )	CNPS 1B
Brittlescale ( <i>Atriplex depressa</i> )	CNPS 1B
Lesser saltscale ( <i>Atriplex miniscula</i> )	CNPS 1B
Palmate-bracted bird's-beak ( <i>Cordylanthus palmatus</i> )	FE, CE, CNPS 1B
Recurved larkspur ( <i>Delphinium recurvatum</i> )	CNPS 1B
Munz's tidytips ( <i>Layia munzii</i> )	CNPS 1B
San Joaquin woolythreads ( <i>Monolopia congdonii</i> )	FE, CNPS 1B
<b>Sensitive Wildlife</b>	<b>Status*</b>
Ciervo Aegilian scarab beetle ( <i>Aegialia concinna</i> )	none
San Joaquin dune beetle ( <i>Coelus gracilis</i> )	none
Giant garter snake ( <i>Thamnophis gigas</i> )	FT, CT
Blunt-nosed leopard lizard ( <i>Gambelia sila</i> )	FE, CE
California horned lizard ( <i>Phrynosoma coronatum frontale</i> )	CSC
Northern harrier ( <i>Circus cyaneus</i> )	CSC
Cooper's hawk ( <i>Accipiter gentilis</i> )	FSC, CSC
Swainson's hawk ( <i>Buteo swainsoni</i> )	CT
Burrowing owl ( <i>Athene cunicularia</i> )	FSC, CSC
California horned lark ( <i>Eremophila alpestris actia</i> )	CSC
Mountain plover ( <i>Charadrius montanus</i> )	FSC, CSC
Fresno kangaroo rat ( <i>Dipodomys nitratooides exilis</i> )	FE, CE
Giant kangaroo rat ( <i>Dipodomys ingens</i> )	FE, CE
San Joaquin antelope squirrel ( <i>Ammospermophilus nelsoni</i> )	CT
San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	FE, CT

**\*STATUS LEGEND:** FE = Federally listed Endangered; FT = Federally listed Threatened; FPT = Federal proposed Threatened; California Native Plant Society (CNPS 2001) CNPS 1B = Rare and endangered plants of California and elsewhere; CE = State listed Endangered, CT = State listed Threatened; and CSC = State Species of Special Concern.

Due to the limited area affected by construction activities, and the existing degraded natural habitats, it is unlikely that special status plant species occur within most of the project area. The special status plant species that potentially occur and/or have

historically occurred in the vicinity of the project (Table 1, above) are known to inhabit native vegetation communities (i.e., valley grasslands and chenopod scrub habitats). These habitat types are extremely limited within the project area, and are only known to occur in areas that have not been converted to agriculture or other use (e.g., areas lining the California Aqueduct, Fresno Slough, and James Bypass).

Similarly, it is unlikely that most of the special status wildlife species listed in Table 1 above are present in the project area due to lack of suitable habitat. Special status wildlife species such as the giant garter snake, Swainson's hawk, burrowing owl, and kit fox, however, are highly mobile species that may occur in the vicinity of the identified transmission line reconductoring projects, and could potentially be adversely affected by project-related activities. In addition, migratory waterfowl are known to congregate within the vicinity of the project during winter migration periods, and may be attracted to the surrounding agricultural areas.

## **Mitigation**

The Applicant has stated that general mitigation measures proposed in Section 8.2.5.1 of the AFC (e.g., Worker Environmental Awareness Training, preparation of a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and pre-construction surveys and monitoring) would apply to the reconductoring portion of the project and would effectively reduce potential impacts.

The Applicant has also proposed additional mitigation that includes conducting pre-construction surveys for special status species in locations where pole replacement activities are within 150 feet of areas that are considered potential habitat for special status species [e.g., the California Aqueduct, Fresno Slough or James Bypass (Calpine 2002)].

Staff agrees that the mitigation measures proposed in Section 8.2.5.1 of the AFC should apply to the Reconductoring Analysis Project, and that pre-construction surveys should be conducted near sensitive areas. In addition, Staff recommends implementation of all the applicable biological resources mitigation measures that are identified in the Energy Commission's Decision, and that the transmission line owner conduct pre-construction surveys at all construction-related locations (i.e., tower locations, pulling and tension locations, marshalling/staging areas, and access roads locations) that are within or near identified sensitive habitats [i.e., riparian and riparian scrub, the annual grassland area (James Bypass), emergent wetland areas (associated with irrigation ditches), and major canals (irrigation ditch or open water features)] to determine if special status plant and/or wildlife species could be impacted by the proposed activities.

In addition to these measures, the CPUC may conduct its own environmental review of the reconductoring project, and would mandate implementation of mitigation measures for any identified potentially significant impacts. The CPUC routinely mandates standard construction mitigation measures, such as the use of Best Management Practices (BMPs), for all reconductoring projects it approves. With implementation of these standard measures, plus those that address potential impacts specific to this reconductoring project, such as the need to compensate for any habitat disturbance or take caused by transmission tower foundation work, it is

likely that the reconductoring project could be accomplished without creating significant impacts to biological resources.

## **Conclusion**

Since the reconductoring work would occur in or near sensitive species and/or habitats, staff concludes that reconductoring the transmission lines could adversely impact sensitive biological resources in and/or adjacent to the transmission line corridor. Potential impacts include direct take, and construction noise effects on nesting activities.

It is Staff's opinion that impact avoidance measures developed in the Staff Assessment for the SJVEC project (CEC, 2002) and herein (Mitigation) could help reduce potentially significant biological impacts to levels that are less than significant. The Applicant has not yet provided the specific type(s), acreage amount(s), and location(s) of habitat(s) that will be affected by the proposed reconductoring project. Therefore, it is not possible to provide a complete analysis of potential adverse impacts to biological resources. Staff recommends that after construction plans are finalized, the Applicant should submit to the CPUC a complete project description (including specific construction locations), the habitat type(s) that will be affected, and the estimated acreage totals of each habitat impacted by the reconductoring project.

Activities associated with reconductoring the transmission line would require compliance with applicable Federal, State and local laws, ordinances and regulations, including: Federal and State Endangered Species Acts, Federal Migratory Bird Treaty Act, and Federal and State Clean Water Acts. Specific agency permits might be required before any reconductoring work could commence. To determine which permits may be applicable to reconductoring the transmission line, staff recommends that the CPUC consult the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corp of Engineers.

If the reconductoring work complies with all applicable LORS, mitigation measures proposed by Staff and the Applicant, and standard Best Management Practices for construction activities are employed, Staff concludes that reconductoring of the Helm-Panoche and Helm-Kearny lines would not likely result in significant impacts to biological resources.

## 3.2 CULTURAL RESOURCES

### Introduction

The applicant assessed the potential environmental effects of reconductoring the Helm-Panoche and Helm-Kerney 230kV transmission lines on a programmatic level in Data Response Set 3, submitted on August 23, 2002 (Calpine 2002). Potential impacts to cultural resources caused by the identified reconductoring projects could occur at or near the approximately 1-acre staging yards, additional staging areas or marshalling yards. Additional areas where ground disturbance might cause impacts are the access or maintenance roads associated with these areas, at the bases of transmission towers that require modification or replacement, and at additional tower foundations that may require excavation work. Modification or replacement of towers with higher towers may change the historical setting of the transmission lines. The transmission lines themselves may also qualify as historical resources.

The applicant contacted the California Historical Resources Information System (CHRIS) at the Southern San Joaquin Valley Archaeological Information Center in Bakersfield and the Native American Heritage Commission (NAHC) for records searches for information on known/recorded archaeological and historical sites, cultural resources surveys, and sacred lands within a one-half-mile radius of the existing electrical transmission lines. Fourteen archaeological sites are located within the one-half-mile radius, and two archaeological sites are recorded within the project area. Portions of the electrical transmission line, approximately 25 miles, from the Panoche to the Helm Substations were surveyed by the applicant's cultural resources staff in October 2001. The electrical transmission line from the Helm to the Kearney Substation, approximately 22 miles, has not been surveyed.

Depending upon the scope of work planned for the identified reconductoring projects, the Helm to Kearney line and unsurveyed portions of the Panoche to Helm Substations may require a cultural resources survey. The potential for encountering Native American artifacts may make it necessary to contact the NAHC to obtain a list of concerned Native American's in the area. The identified Native American individuals or groups should then be contacted to assist in the identification of additional cultural resources or sacred sites.

Information from the archaeological site record for P-10-000559 along the existing electrical transmission line route indicates that it was probably a village site. The similar topography and setting that exists along the reconductoring route raises concerns regarding the existence of additional buried archaeological resources.

Cultural site P-10-0003081 along the existing transmission line route contains historic debris from the 1930s and 1940s. After additional surveys are complete, similar sites may be identified along the reconductoring routes.

## **Impacts of Reconductoring**

Ground disturbance, the presence of vehicles driving over the top of sites and the installation of new poles, the modification or repair of existing poles and their foundations could all damage archaeological resources. After the archaeological and historic surveys are complete and after the work area is defined, additional archaeological sites or historic resources within the built environment may be identified. If the Panoche to Helm and/or the Helm to Kearney transmission line is determined to meet the criteria for eligibility to the NRHP or CRHR, the reconductoring effort may be an impact to these resources.

## **Mitigation**

The applicant recommends that the two archaeological sites recorded along the route be revisited to determine any possible effects the project may have on these locations. Moreover, the applicant recommends that the 22 miles of transmission line from Helm to Kearney Substations be surveyed prior to the startup of field operations for the reconductoring project.

Staff recommends that a cultural resources survey be conducted along the transmission lines that would be reconducted. Any areas that have not been surveyed within the last five years should be surveyed. In addition, staff recommends monitoring during ground disturbance at pull site locations or other areas where key project activities are occurring.

Particular caution should be taken in the vicinity of previously identified archaeological sites. If cultural material is identified, ground disturbance should halt until the find can be evaluated. Additional mitigation measures should include formal site recordation, evaluation and if appropriate data recovery and curation. Previously identified archaeological sites should be evaluated and if they meet the criteria for eligibility to either register and they can not be avoided, data recovery should be conducted as a mitigation measure.

An impact to a historical resource is significant if the impact results in the significance of an historical resource being materially impaired. Whether actions of a project constitute a significant impact depends upon which criteria are applicable to the cultural resource in meeting eligibility to the NRHP or CRHR and whether the aspects of the cultural resource that make it significant will be impacted by the project. To ensure that there will not be a significant impact to a cultural resource it is necessary to evaluate the potential resource according to criteria for eligibility to either the NRHP or the CRHR. It is appropriate to consider potential cultural resources that may be older than 45 years or exceptional for eligibility to the NRHP or the CRHR. After it is determined whether potential cultural resources meet the criteria for eligibility to the NRHP or the CRHR, then it is necessary to consider whether physical alterations may be an impact. Whether the resource has unique features may or may not play a role in whether it meets the criteria for eligibility to either register and are not valid criteria for deciding whether or not to evaluate the resource.

Staff also recommends evaluation of any transmission lines that would be reconducted that are 45 years old or may be considered exceptional. Recordation

may serve as mitigation for impacts if a line is recommended as meeting criteria for eligibility to the NRHP or CRHR.

## **Conclusion**

It appears that the proposed reconductoring route is sensitive for archaeological resources. Depending on the scope of work associated with the reconductoring project, such as whether it would include new foundations or raising the height of some towers, some of the resources may be adversely affected as a result of the reconductoring effort. In general, after all cultural resources are identified and a determination is made regarding whether they meet the criteria for eligibility to either the NRHP or the CRHR, except in cases where a cultural resource is demolished, mitigation is usually possible through recordation or data recovery.

### **3.3 LAND USE**

#### **Introduction**

As provided in Calpine's environmental assessment, reconductoring involves replacing three existing transmission lines in two corridors with newer lines of similar weight and greater capacity. Therefore, existing transmission towers in established utility corridors that conform to all applicable LORS, including general plan goals of Fresno County, can be utilized. The Helm to Panoche transmission line begins at the Helm Substation and runs westward across cultivated fields parallel to Manning Avenue, before crossing the San Luis Canal of the California Aqueduct. Approximately 2.5 miles west of the California Aqueduct, the line turns northwestward and continues across orchard lands and agricultural fields for approximately 4.6 miles before reaching the Panoche substation. The total length of the Panoche-Helm 230 kV line is approximately 25 miles.

The Helm-Kearney transmission line carries a single 230 kV circuit. It runs directly east for 15.8 miles, crossing cultivated agricultural fields as well as the James Bypass just past Raisin City, before turning north for 7.0 miles and the east for 0.8 miles. The line runs through an extensive area of industrial development south of the Kearney substation as it crosses the wastewater treatment plant ponds for the Fresno Wastewater Plant in its final 2 miles.

Reconductoring the Helm-Panoche and Helm-Kearney lines would each require a temporary staging yard of about one acre at each of their terminal ends, and an additional staging area near the Helm substation. Marshalling yards would likely be located on agricultural land next to the Panoche and Kearney Substations, and would be rented or leased for the four- to five-month construction period. Landowners would be compensated for crop disturbance and loss.

Concentrated work will most likely occur at some of the transmission tower deadend locations, many of these at angled towers. Conductor pulling, payout, and sagging/tensioning equipment will be stationed at some these locations. Each work area will be approximately 100 by 200 feet in size (0.46 acre). Work areas will be delineated so as to avoid sensitive biological and cultural resources.

Calpine proposed that the right-of-way for each transmission corridor would be cleaned up when its reconductoring activities are complete. Project-related debris would be removed from the right-of-way and disposed of at an appropriately licensed facility. The appropriate land management agency and landowner(s) would approve these locations. Ruts and other similar disturbances would be smoothed. Any areas requiring revegetation would be seeded with a weed-free seed mix approved by the appropriate land management agency and landowner(s). Reconductoring would require access to the existing transmission line right-of-way by construction vehicles and equipment. The two transmission line routes are easily accessible via agricultural roads that are generally perpendicular to main paved roads such as Manning Avenue.

## **Conclusion**

Potential impacts to land use would be short-term and confined to the work areas. They would not displace any existing use. There would be no significant land use impacts along the electrical transmission line route related to the reconductoring project. Therefore, no mitigation measures are warranted.

### **3.4 NOISE**

#### **Introduction**

Reconductoring the Project-Panoche, Helm-Panoche and Helm-Kearney lines would require operation of heavy equipment at pull and tensioning sites, and at several transmission towers that may require modification. Potential sites for pulling and tensioning sites would be required. The potential for heavy equipment operation to disturb adjacent noise-sensitive land uses during the temporary period of line work was reviewed by the Applicant. After the reconductoring work is complete and the lines are operational, the Applicant expects no change in corona noise levels.

#### **Impacts of Reconductoring**

Reconductoring work would require operation of construction-type equipment at the pull and tensioning sites. In some cases, a helicopter may be used to string line. A period of 4 to 5 months are estimated to complete the reconductoring. At a distance of 300 feet, most construction equipment would not be louder than approximately 70 decibels, which would not be likely to disturb surrounding agricultural or undeveloped land uses. To manage noise from the work sites, the applicant proposes that work would only occur during daylight hours.

After reconductoring the lines, CEC staff would not expect any substantial increase in corona noise levels. Corona noise is a function of the line voltage and the condition of the line. Because voltage would remain the same after reconductoring and the condition of the line would be upgraded, corona noise may actually be reduced.

#### **Mitigation**

Energy Commission staff recommends implementation of mitigation measures similar to the proposed Conditions of Certification from the Staff Assessment NOISE-1, NOISE-2, and NOISE-7 to minimize potential impacts by implementing the complaint resolution process and specifying construction hours. For convenience, those Conditions of Certification are listed below:

**NOISE-1** At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one-half mile of the site and the linear facilities, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

**Verification:** Prior to ground disturbance, the project owner shall transmit to the CPM a statement, signed by the project manager, stating that the above notification has been performed, and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

## NOISE COMPLAINT PROCESS

**NOISE-2** Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- If the noise is project related, take all feasible measures to reduce the noise at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

**Verification:** Within 5 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the local jurisdiction and the CPM documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 3-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

## CONSTRUCTION TIME RESTRICTIONS

**NOISE-8** Heavy equipment operation and noisy construction work shall be restricted to the times of day delineated below:

Monday-Saturday                      6 a.m. to 6 p.m.

Noise due to start-up steam blows shall be restricted to the times of day delineated below:

Monday-Saturday                      6 a.m. to 6 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

**Verification:** Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

## **Conclusion**

By implementing mitigation measures similar to the Conditions of Certification that were proposed in the Staff Assessment for construction of the SJVEC plant, potential noise impacts from reconductoring work would be avoided.

### **3.5 TRAFFIC AND TRANSPORTATION**

#### **Introduction**

The total length of the proposed reconductoring of the Helm to Panoche transmission line is approximately 25 miles, and the length of the Helm-Kearney transmission line is approximately 24 miles. The majority of reconductoring activities would take over intensively cultivated agricultural fields and orchard lands. The area's roadways (e.g., Manning Avenue) would be used for transportation of equipment and access to the temporary staging areas. Local rail lines (i.e. Union Pacific Railroad) may also be used for delivery of equipment and materials. As indicated in the AFC, all the roadways potentially affected by the SJVEC project, including those proposed for use in reconductoring activities, are operating at or above an acceptable LOS. All conducting activities will comply with traffic and transportation LORS administered by Caltrans, the County of Fresno, and the City of San Joaquin.

The reconductoring workforce will consist of 15 to 20 workers, including a foreman, equipment operators, general laborers and environmental monitors and inspectors. The applicant estimates that the reconductoring will take between 4 to 5 months to complete. The applicant has also indicated that typical equipment (i.e., a tensioner and cable puller) would be used for the purposes of reconductoring. These are generally large, 10-wheel trucks that are designed for heavy loads. Additionally, a conductor-cable reel trailer, boom truck, aerial bucket truck or helicopter may be used during reconductoring activities. Each cable stringing operation requires three to five pieces of equipment and related support vehicles. The choice of equipment to be used is affected by the ease of access, and the presence of potentially significant environmental impacts. Temporary staging areas will be used for equipment and material storage.

#### **Impacts of Reconductoring**

As the majority of reconductoring activities would take place over agricultural lands, they would have minimal impact, if any, on the traffic level of service for the highways and roads in the vicinity. Any activity that needs to occur outside of the transmission line right-of-way will require landowner notification and permission for access. Movement of heavy machinery on local roads would occur intermittently, but infrequently over the four to five month reconductoring project schedule.

The minimal reconductoring activity that would occur on highways and roads could have the following potential impacts:

- Use of undesignated access roads or public roads could affect local traffic and create safety hazards;
- Use of public roads for parking reconductoring vehicles and workers' personal vehicles could affect local traffic; and
- Occasionally during overhead construction projects, materials fall into the roadway, which would create a safety hazard.

These potential impacts can be avoided through the mitigation measures proposed below.

## **Mitigation**

Staff recommends that all reconductoring related vehicle movements outside the transmission right-of-way be restricted to pre-designated access or specified public roads. Should unforeseeable circumstances occur during reconductoring activities, resulting in the disturbance of more areas than initially requested, the project owner should obtain permission from the landowner.

All reconductoring related parking should take place on pre-designated and contractor-acquired staging areas.

Finally, the applicant should consider the need for installation of netting as a safety precaution to reduce the potential for construction materials falling on motorists, bicyclists, or pedestrians during the tensioning/cable pulling process where reconductoring activities require the crossing of roadways.

## **Conclusion**

The reconductoring activities proposed for the SJVEC would not result in any substantial traffic and transportation impacts. Even with the required reconductoring, the SJVEC project would still be in compliance with all applicable LORS. The small amount of traffic trips generated from the reconductoring activities would not result in any impacts beyond those evaluated in the AFC and the Staff Assessment. Additionally, implementation of the above mitigation measures would reduce any potential traffic and transportation impacts resulting from reconductoring to insignificant levels.

## **3.6 TRANSMISSION LINE SAFETY AND NUISANCE**

### **Introduction**

If the identified lines are reconductored, the electric and magnetic field impacts that were addressed in the Staff Assessment (SA) for the San Joaquin Valley Energy Center (SJVEC) would also be of potential concern for the area along the respective routes. As noted in the SJVEC SA, the magnitude of such fields depends on line voltage and current levels. The potential for perceivable field impacts and significant field exposures would depend on the chosen design, the current levels, and distance from the line.

### **Impacts of Reconductoring**

Since the retrofitted lines would be operated at the same voltage (230 kV) as the existing lines, the magnitude of the electric field along each route would not change from current levels, meaning that the types of electric field impacts that were addressed with respect to the SJVEC-related transmission lines would not change from existing levels. The only field-related change from the retrofit (and its related increases in current flow) would be with respect to the magnetic field, whose intensity depends directly on current levels, as noted in the SJVEC FSA.

Since the retrofitted lines would remain within their existing routes, the retrofit-related increases in magnetic field intensity would lead to corresponding increases in human exposure to line magnetic fields. As noted in the submittal from the applicant, (Calpine 2002, page 15), any reconductoring of the identified lines would not change the land use along the respective routes. Given the general absence of residences in the immediate vicinity of the lines at issue, the residential magnetic field exposures at the root of the present health concern would be insignificant after reconductoring. The only field exposures of potential significance are to line workers and individuals in transit under the line. These types of exposures are well understood as not significantly related to the present health concern.

### **Mitigation**

The CPUC's way of ensuring the appropriate management of fields from high-voltage power lines (in light of the current health concern) is to require incorporation of specific field-reducing measures in the design for new or retrofitted lines. The applicable measures for the proposed SJVEC lines and the lines that might be retrofitted are those specified in PG&E's guidelines prepared in compliance with current CPUC's requirements. Staff's recommended conditions of certification in the SJVEC FSA are intended to ensure compliance with this CPUC policy as related to field strengths, perceivable field effects, electric shocks, and human exposure. Since the reconductored lines would be designed and operated according to standard PG&E practices (Calpine 2002, pages 8 and 9), staff would expect these lines to be operated in accordance with the applicable health and safety laws, ordinances, regulations and standards (LORS).

### **Conclusion**

If the identified 230 kV lines are reconductored, they would be designed, built and operated (within their existing routes) according to CPUC's requirements, reflecting

compliance with the health and safety LORS of concern to staff. Therefore, staff would not expect their operation to pose a significant health and safety hazard to individuals in the area.

### **3.7 VISUAL RESOURCES**

#### **Introduction**

The Helm to Panoche transmission line begins at the Helm Substation and runs westward across cultivated fields parallel to Manning Avenue, before crossing the San Luis Canal of the California Aqueduct. Approximately 2.5 miles west of the California Aqueduct, the line turns northwestward and continues across orchard lands and agricultural fields for approximately 4.6 miles before reaching the Panoche substation. The total length of the Panoche-Helm 230 kV line is approximately 25 miles.

The Helm-Kearney transmission line runs directly east for 15.8 miles, crossing cultivated agricultural fields as well as the James Bypass just past Raisin City, before turning north for 7.0 miles and the east for 0.8 miles. The final two miles crosses the Fresno Wastewater Treatment Plant ponds.

#### **Impacts of Reconductoring**

Reconductoring of the Helm-Panoche and Helm-Kearney lines would each require a one-acre staging yard at each of their terminal ends, plus an additional staging area located at the SJVEC site near the Helm substation. Marshalling yards would likely be located on agricultural fields next to the Panoche and Kearney Substations, and would be rented or leased for the construction period. Each reconductoring project would take approximately four-to-five months, overall. The reconductoring work would probably occur during times of relatively low electrical demand to protect system reliability while the lines are out of commission. This may mean that crews would work through two seasons to accomplish all the reconductoring needed for the SJVEC project.

The project area consists of primarily agricultural land uses. There are no cities along the transmission line, but the number of proximate farm houses, residences and landscape habitat types increases east of McMullin substation. Similarly the line crosses through an extensive area of industrial development on the south side of Kearney substation, as it crosses the Fresno Wastewater Treatment Plant ponds. The transmission line routes are accessible via agricultural roads that are generally perpendicular to main paved roads such as Manning Avenue.

Conductor pulling and tensioning equipment would be located at various locations along the transmission lines. Construction equipment and activities would likely be visible to motorists and the few rural residents living near the lines. Due to the relatively temporary nature of project construction, the adverse visual impacts that would occur during construction would not be significant. However, this conclusion assumes that construction areas and rights-of-way are restored to their pre-project conditions.

Reconductoring involves the replacement of existing electrical transmission wires (conductors) with new wires. This change to the transmission lines would be undetectable to viewers of the lines. Until the project is in the final design stages, it is not known whether it would be necessary to raise the height of existing towers or replace towers with stronger towers in order to accommodate the sag requirements and heavier weight of the new wires. Because the existing transmission line and towers are an established part of the setting, the adverse visual impacts that would occur due to

the new wires and any changes in tower height or design would likely not be significant. However, this conclusion assumes that the new wires and towers would incorporate typical measures to mitigate potentially significant adverse visual impacts.

### **Mitigation**

With the inclusion of the following typical mitigation measure, reconductoring activities would likely not be significant:

- All evidence of construction activities, including ground disturbance due to staging and storage areas, should be removed and remediated upon completion of construction. Construction areas and rights-of-way should be restored to their original grade and contouring. Any vegetation removed in the course of construction should be replaced on a one-to-one in-kind basis.

With the inclusion of the following typical mitigation measures, operation of the recondored lines would likely not cause significant adverse visual impacts:

- Transmission towers should be treated with non-glare finishes and painted in colors that would blend with the surrounding environment;
- Non-specular conductors should be used; and
- Insulators should be non-reflective and non-refractive.

### **Conclusion**

The reconductoring project has the potential to cause adverse visual impacts. Feasible mitigation measures are available that would likely keep the visual impacts of the reconductoring project to levels that would not be significant. Other mitigation measures to reduce the visual impacts of the project may be identified as more detailed and specific environmental information is developed and analyzed.

## **3.8 SOIL & WATER RESOURCES**

### **Introduction**

In association with the proposed 1,100 MW San Joaquin Valley Energy Center (SJVEC), it may be necessary for PG&E to reconductor two sections of a 230 kV transmission line. The first section, the Helm-Panoche Line, would extend 19.6 miles from PG&E's Helm substation to the Panoche substation. The second section, the Helm-Kearney Line, would extend 25.6 miles from the Helm substation to the Kearney substation. The lines run primarily across lands used for agriculture including orchards and row crops. Land in the vicinity of the transmission line corridors is gently sloped or flat in topography. Soil types for the transmission line routes would consist of the Merced Clay/Clay Loam, or soils similar in properties to the Merced Clay/Clay Loam. Merced soils developed on mixed igneous and sedimentary alluvium deposited in the lowest portions of the valley basin. These soils formed in floodplains primarily as overbank flood deposits and were derived chiefly from granitic rocks in the Sierra Nevada. In particular, the fine-grained alluvial sediments upon which Merced-series soils formed were deposited by the Kings River via the Fresno Slough during flood stage. Merced soils tend to drain moderately well, have very low erosion potential, and have a fair to excellent revegetation potential. Although some of the affected soils are considered to be saline and saline-alkali soils, revegetation should be successful provided adequate irrigation is provided while plants are established. (SJVEC 2001a, AFC Sections 8.4, 8.9 and 8.16.3.5.2) (SJVEC 2002d, Data Request #82).

### **Impacts of Reconductoring**

#### ***Towers and Footings***

PG&E has indicated that in general during reconductoring projects, it may be necessary to raise the height of several towers to allow for greater conductor sag. Similarly, inspections prior to starting the reconductoring work may reveal that some towers require new foundations, which may increase the potential for earth disturbance and erosion. The transmission lines cross several water conveyance features that include the San Luis Canal of the California Aqueduct, and the James Bypass. Construction activities for new towers and footings would not occur within any watercourses; therefore, impacts to water quality for construction and operation of the transmission lines would be less than significant. By implementing Best Management Practices (BMPs), such as sediment trapping devices, limiting the amount of exposed areas at a given time, restabilizing disturbed areas, and avoiding earth disturbance activities within watercourse, the overall impacts related to erosion and sediment control would be less than significant.

#### ***Reconductoring without New Towers and Footings***

If existing towers can be used or reinforced without construction of new towers and footings, the potential for impacts to soils and water resources is significantly reduced. Work sites using larger truck-mounted equipment would likely be limited to areas near angle towers (greater than 20 degrees). Temporary pull and tensioning sites would require an area of about 100 by 200 feet (0.5 acre) for equipment setup. These temporary sites would be susceptible to erosion from soil disturbance and compaction

as a result of the vehicular traffic; however, the soil types in the potentially affected areas are clays, which generally have a low erosion hazard potential.

## **Mitigation**

### ***Towers and Footings***

The following mitigation measures should be implemented for earth disturbance activities associated with any needed work on tower footings:

- Construction should be performed in accordance with an Erosion and Sediment Control Plan (ESCP). The ESCP should address erosion and sediment control BMPs during construction and revegetation measures following construction. Fresno County would likely serve as the reviewing authority for the ESCP.
- If construction could affect land in aggregate of 5 acres or greater prior to March 2003, or greater than 1 acre during or after March 2003, then a Storm Water Pollution Prevention Plan (SWPPP) would be required. The Central Valley Regional Water Quality Control Board (RWQCB) would likely serve as the reviewing authority of the SWPPP, and may require a General NPDES Permit for Storm Water Discharge Associated with Construction Activity.
- Existing roads and rights of way should be used to the greatest extent possible.

### ***Reconductoring***

For temporary disturbance areas established on soil for pull and tensioning sites, and for work sites set up to modify existing towers, the following mitigation should be included:

- Construction should be performed in accordance with an Erosion and Sediment Control Plan (ESCP). The ESCP should address erosion and sediment control BMPs during construction and revegetation measures following construction. Fresno County would likely serve as the reviewing authority for the ESCP.
- If construction could affect land in aggregate of 5 acres or greater prior to March 2003, or greater than 1 acre during or after March 2003, then a Storm Water Pollution Prevention Plan (SWPPP) would be required. The Central Valley Regional Water Quality Control Board (RWQCB) would likely serve as the reviewing authority of the SWPPP, and may require a General NPDES Permit for Storm Water Discharge Associated with Construction Activity.
- Existing roads and rights of way should be used to the extent possible.

## **Conclusion**

Significant environmental impacts to soil and water resources related to construction and operation of the Reconductoring project would be avoided by implementing the aforementioned mitigation measures.

## **3.9 TRANSMISSION SYSTEM ENGINEERING**

### **Introduction**

Reconductoring of the Helm - Kearney 230 kV line and the Panoche – Helm #1 and #2 circuits, should it occur, would involve removing the existing conductors and replacing them with higher rated conductors, in a manner that complies with applicable safety and reliability standards. The System Impact Study for the project recommends replacing the existing conductors (either 795 ACSR or 1113 Aluminum) with 954 ACSS conductor. This would result in approximately a doubling of transmission capacity. Insulators would also be removed and replaced with new strings, which would increase the line's capability to withstand voltage surges. Please see Chapters 1 and 2 of this Appendix for additional description of the likely construction areas and methods.

### **Impacts of Reconductoring**

During construction, applicable safety and reliability Laws, Ordinances, Regulations and Standards (LORS) must be met. These include CPUC General Order 95, Title 8 CCR Construction Safety Orders, and PG&E Construction Standards. Additionally, to maintain system reliability the Cal-ISO must be advised per the Cal-ISO scheduling protocol of scheduled circuit outages prior to occurrence. Such outages are scheduled about 30 days prior to occurrence and are verified just prior to actual outage. In the event that system reliability requires restoring such circuits, a “no work” order is given and where practicable, circuits are restored.

Reconductoring of the Helm - Kearney 230 kV line and the Panoche – Helm #1 and #2 circuits would result in local system benefits, in that it would provide considerably greater flexibility in routing power in the Greater Fresno Area transmission network, even if the San Joaquin Valley Energy Center is not built. The reconductoring project would not only ensure that the San Joaquin Valley Energy Center project could generate at its rated capacity, but would increase the capacity and reliability of power deliveries to and from the Greater Fresno Area. Parts of the transmission and distribution system in the Greater Fresno Area may also have to be upgraded in order to take full advantage of the increased capacity of the Helm - Kearney 230 kV and the Panoche – Helm #1 and #2 lines.

### **Mitigation**

To mitigate potential safety and reliability impacts the above stated LORS and Cal-ISO scheduling protocols would be used. The CPUC assures conformance with the above safety requirements; the Cal-ISO would assure conformance with its reliability requirements.

### **Conclusion**

Conformance with applicable safety and reliability is likely to occur and would be successful in mitigating any safety or reliability implications of reconductoring.

## **3.10 GEOLOGY AND PALEONTOLOGY**

### **Introduction**

The Project to Panoche, Helm to Panoche, and the Project to McMullin to Kearney 230 kV transmission lines are located in the California Great Valley geomorphic province. This area within the Great Valley is characterized by relatively flat ground cut by several small drainages, including the Fresno Slough. These transmission lines traverse Great Valley Sequence deposits. The Project to Panoche and Helm to Panoche lines traverse Holocene flood basin deposits of clay, silt, and sand and Miocene to Holocene sedimentary deposits of clay, silt, sand, and gravel that are derived from continental rocks (Page, 1986). The Project to McMullin to Kearney line traverses Holocene flood basin deposits of clay, silt, and sand, Holocene windblown sand and dune sand, and Miocene to Holocene sedimentary deposits of clay, silt, sand, and gravel that are derived from continental rocks (Page, 1986).

The closest known active fault is the Coast Ranges – Sierran Block Boundary Zone (CRSBBZ), located approximately 3 miles west of the Panoche Substation. Energy Commission staff have calculated an estimated deterministic peak ground acceleration to be on the order of 0.4g. Energy Commission staff have calculated an estimated peak ground acceleration to be on the order of 0.2g for the Helm Substation and 0.1g for the Kearney Substation. These estimates are based upon a moment magnitude 6.4 earthquake in the Coast Ranges – Sierran Block Boundary Zone (CRSBBZ).

### **Impacts of Reconductoring**

Since no new facilities, including electrical transmission towers, are anticipated to be constructed as part of reconductoring related to the SJVEC, the impacts to geologic and paleontologic resources would be limited to temporary staging areas and marshalling yards. These sites would not require significant grading or other disturbance of soils at depth. As a result, geologic hazards should have minimal impact on the reconductoring project as long as no new towers are constructed. Since minimal ground disturbance and excavation of site soils is anticipated, it is Staff's opinion that the potential for impacts to geologic and mineralogic resources is low.

No significant fossil fragments were identified in the AFC at the SJVEC or associated water and gas linears; however, significant fossils were present within ½-mile of the SJVEC and along the proposed water line linear. In addition, the geologic units mapped as being present along the electrical line linears have been assigned a high sensitivity (Calpine, 2001) with respect to potential paleontologic resources during a previous paleontologic survey. As a result, the geologic units present along electrical line linear routes may contain significant paleontologic resources such that mitigation measures will be necessary.

### **Mitigation**

Though not anticipated for the reconductoring work identified above, there is a potential to uncover significant paleontological resources during any ground disturbing activities that may be associated with the reconductoring of the electrical lines, such as during

any needed excavation required to upgrade tower foundations, etc. Therefore, if the reconductoring work includes excavation or other significant ground-disturbance activities, Staff recommends that measures to mitigate the impact to paleontological resources be implemented. Suggested measures are included in the Staff Assessment as PAL-1 through PAL-7.

## **Conclusion**

The project will result in no significant impacts to the public or the environment with respect to geologic hazards or geologic, mineralogic, or paleontologic resources, provided that the proposed mitigation measures are implemented and the project complies with applicable LORS.

## 4 CONCLUSION

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Chapters 2 and 3 of this Appendix describe the process and the potential impacts of reconductoring the Helm-Panoche and Helm-McMullin-Kearney Transmission Lines. This study was undertaken to inform the Energy Commission and the general public of the potential indirect environmental and public health effects caused by the approval of the SJVEC project..

The environmental and engineering disciplines can be divided into two groups: those with the potential for significant impacts, and those in which impacts are easily mitigable or less than significant. This analysis determined that impacts in the following discipline areas would likely be less than significant for reconductoring projects (some with implementation of standard mitigation measures, such as fugitive dust control to control emissions of particulate matter during construction, for example):

- Air Quality
- Facility Design
- Hazardous Materials Management
- Power Plant Efficiency
- Power Plant Reliability
- Public Health
- Worker Safety
- Socioeconomic Resources
- Waste Management
- Worker Safety

The disciplines where potential impacts reconductoring are of most concern are biological resources, and cultural resources. The conclusions of these analyses are described below.

Biological Resources:

Cultural Resources:

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